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THE AEROPLANE

1d WEEKLY

Edited by C. G. GREY. ("Aero Amateur")

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Jan - June
1913

"GETTING READY."



M. René Caudron is here shown preparing for one of the hydro-aeroplane flights on the 60-h.p. Anzani-Caudron which were a regular feature of daily life at Crotoy last year. These machines will be seen at numerous places round the British coast this year.

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"Daily Telegraph," Monday, December 9th.

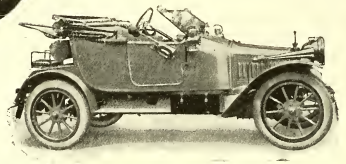
"Saturday was no exception to the rule. The day was a dismal one. Low-lying clouds, a thick mist, and withal a sharp gusty wind in the upper reaches, combined to make the conditions as unfavourable as possible. It was with some surprise, therefore, that we learned, shortly after noon, that the Handley Page monoplane, carrying a passenger in addition to the pilot, had started from Brooklands, where it had been flown the previous week, on its way to Hendon. The journey proved an adventurous one; in spite of the 20-mile wind, the ground was lost from sight in the mist immediately after the start. The monoplane rose to 400 feet, and was thereafter steered by compass. The only landmark seen during the flight was the spire of Harrow Church looming out of the fog. Even from the Welsh Harp, less than a mile away, the aerodrome was invisible, and it was only after circling for some time that the pilot managed to obtain a glimpse of the aerodrome and to effect a landing.

"REMARKABLE RECORD.

"The record of the Handley Page monoplane during the last two months has been a remarkable one. It is designed on a principle that endows it with a large measure of automatic stability; accordingly, the machine has been flown in all weathers, irrespective of the strength of the wind, for the purpose of demonstrating its undoubted qualities in this respect."

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An Inevitable Policy.

There has recently been a great outcry in certain quarters against the policy of the Admiralty in buying the "Astra-Torres" dirigible in France, and the "Parseval," through the medium of Vickers, Ltd., in Germany. Among the severest critics of the policy has been Mr. C. C. Turner, who, in the "Observer," "Pall Mall, and elsewhere, has been the present writer's most valuable ally in the campaign for more orders for British aeroplane manufacturers. As a rule Mr. Turner's views on what one may call the politics of aeronautics are not only sound and practical, but far in advance of those of most of his contemporaries, but in this instance his laudable enthusiasm for the support of home industries seems to have carried him past the turning, and onto the wrong road.

After carefully reviewing all possible policies one cannot see that the officials now controlling the Air Department at the Admiralty could act otherwise than they have done if they are to do their best for the future of our aerial defence force.

Let it be remembered in the first place that there is no one in this country able to build even medium-sized airships such as these and deliver them within reasonable time, for it is the time factor which has decided the purchase. If we are to buy or build large dirigibles it is essential that we should have medium-sized machines with which to train navigators, crews, and landing parties before letting them handle the big machines. As has been said before in these columns, if we could buy a Zeppelin to-morrow we should break it up the day after, just as we broke up the "Morning Post" Lebaudy, because we have no one who knows how to handle it. Therefore, if we are to have these big ships later on we must, for economy's sake, train our men on smaller ships.

We must remember that aerially we are not the peers of the Great Powers, France, Germany, Austria, Italy, and Russia, but are somewhat inferior to the Balkan States, Bulgaria, and Greece.

Now, to take a naval analogy, supposing Bulgaria, flushed with her new-found strength, were to be seized with the ambition to become a naval power, and were to buy a super-Dreadnought, we should be the first to ridicule the Bulgarian Government, for she has no harbour fit to shelter it and no men able to handle it, and we should expect to see it wrecked the first time it went out. If the Bulgarians bought some fast, medium-sized cruisers abroad, with the intention of building capital ships themselves later on, we should applaud their businesslike policy, especially if they placed their orders with British yards. But if the famous Bulgarian nautical publicist Karol Turnereff, certificated navigator, cried aloud that Bulgarian money must not be spent abroad, but must be devoted to building extra-super-Dreadnoughts at Varna, because his friend M. Vulovitch had built an excellent steam pinnace and was capable of undertaking the bigger job at once, we should—to use the comprehensive Shakespearean phrase—"write him down an ass."

Far be it from me to suggest that my friend Mr. Turner in any way personally resembles the apocryphal Bulgarian hypothesised in the foregoing paragraph. I merely suggest a somewhat divergent similarity of national procedure. As a matter of fact our position is briefly this. The only independent constructor in the whole British Empire who has any practical experience of designing, building, or navigating a dirigible balloon is Mr. E. T. Willows. But Mr. Willows' experiences are confined to the little "City of Cardiff," and the still smaller machine recently built by him for the Admiralty—an excellent little thing in its way, despite the unfair attack made on it a week or so ago by the patently prejudiced aeronautical correspondent of the "Daily Mail." Therefore it must be obvious that if the War Office or Admiralty offered Mr. Willows an order for a Zeppelin, supposing Mr. Willows had the designs in his pocket to-day, some time would have to elapse before he could obtain the financial backing for such a huge undertaking, especially as such an order would be dependent on the machine being a success, and he would have to convince his prospective financiers that he could make it successful, which would presumably be more difficult than convincing those who, like me, have watched his work from the beginning and know both his capabilities and his ideas for improvements. After he had got his financial support he would have to organise his works, train men for special jobs, and so forth, all of which means more delay. Then there would have to be a wide margin of time for tests of parts and for general experimenting with the whole ship before she was in trim to be handed over as a finished job. Something between a year and eighteen months would be a moderate estimate for the time needed for all this, even if no untoward accident occurred such as the wrecking or burning of the ship when partly finished, as has happened to one or two Zeppelins. And after waiting all that time we should have to start in to train people to handle the machine, a process which has cost Germany about three years and at least three wrecked Zeppelins, not to mention half a dozen Parsevals, Grosses, and assorted gas-bags.

Of course, one may argue that Vickers, Ltd.,

might have bought the Parseval designs and have built the machine themselves instead of buying it ready made and selling it again. That would have been a singularly unwise proceeding, for if they wish to build non-rigid ships of the Parseval type they will do so much more cheaply when they have the completed article in front of them to show them what to do and what to avoid. Anyhow, it is quite doubtful whether ships of this size and type are of any use except as training vessels, or in war against savages and other nations as ill-equipped with modern aerial vehicles as we are to-day. It is much more likely that such a huge and enterprising firm as Vickers, Ltd., will ultimately evolve a veritable aerial Dreadnought.

There is also the argument that vessels of medium size, such as the "Astra" and the "Parseval," might have been built at the Royal Aircraft Factory, which would, at any rate, have given employment to British workmen and have kept the money in this country. Against this there is the argument that the R.A.F. have had no more real experience of building medium sized ships than Mr. Willows has had, and though they would save the time necessary to him for finding financial support and organising his work, there is no guarantee that they would produce even a reasonably efficient machine in a year.

I forget how long it is since work on the "Delta" was started. It seems somewhere "in the dim backward and abysm of time" since we first heard of the new dirigible which was to do so much with so little power. Yet the machine has never yet done even a mediocre performance and has been a failure since her inception. First of all the Factory-built envelopes burst under quite low pressure tests. Then the framework buckled when slung up for trial. And when, after much doctoring, she was finally got out and started off for Manœuvres, she reached Finchley, and had to put back with the wind, reaching Farnborough in a most dangerous state, with her nose and tail in the air and the framework hanging precariously from the sagging waist of the gas-bag. Would that we had another Hogarth to depict the "Voyage of the 'Delta' to Finchley" as a companion picture to the famous "March of the Guards." There are fine opportunities. At any rate, the record of the last few years' work on dirigibles at the R.A.F. does not encourage one to believe that a machine as good as either the "Astra" or the "Parseval" would emanate from that establishment as quickly as the more delayed of these foreign machines will be delivered.

The Need for Immediate Orders.

There seems, then, no alternative to ordering these vessels abroad. But—and here is the point of the whole thing—the money spent on them will be wasted unless orders are given right now—to use an expressive Americanism—for other and larger ships to be built in this country. If Vickers Ltd. receive an order for a vessel similar to the "Parseval" it could certainly be completed long before the end of this year. If E. T. Willows, Ltd., also had an order given them they could deliver the machine presumably not much later than Vickers, Ltd., for his preliminary delay in organising works would be partly made up for by his experience in working balloon materials. In the meantime the Royal Aircraft Factory could go ahead with their experiments in larger machines, and might even attempt the ultimate aim of their ambition, namely, the construction of a really big rigid ship.

During this period it would also be necessary to build at least half a dozen sheds big enough to shelter the largest rigids. These sheds would probably cost something in the nature of £10,000 apiece, so if we are going to do the thing at all we may as well do it properly, and put through estimates sufficiently large to cover these buildings.

It will be merely playing with the subject to set down in either the Naval or Army Estimates a mere £100,000 or so for aeronautics; unless, of course, the buildings are to be paid for out of another vote apart altogether from the aeronautics vote as such. There is talk of the equivalent of £,000,000 for naval aeronautics in the next German estimates, and if we are to put our aerial defences on a sound basis we must begin to think on a similar scale. Those in this country who have property to lose must be prepared to pay for its defence, and they must not expect the money to come out of social improvements, for it is little use providing "materiel" for defence if the "personnel" who are to use it has been allowed to degenerate. We must provide "food for powder" as well as the powder itself.

Also, in our enthusiasm for dirigibles we must not forget our aeroplanes. Any money spent on dirigibles must be supplementary to that which we should in any case spend on aeroplanes. The heavier-than-air machine will always be faster than the lighter-than-air vessel, just as the hydroplane will always be faster than the displacement boat, and speed is, above all things, essential in warfare, whether on land, on the sea, or in the air. As the destroyer is to the battleship so is the aeroplane to dirigible, with the added advantage that it is working in three dimensions instead of two, and that an aeroplane over the top of a dirigible has a greater advantage and is in less danger than a destroyer within torpedo range of a battleship.

It may be easily appreciated that an adequate supply of aeroplanes is much more essential than a fleet of dirigibles. Supposing we were at war with any of the minor aerial Powers of about our own calibre, so far as expenditure on aerial defence is concerned. Where should we be with the "Astra-Torres," the "Parseval," and the little airboatlets at Farnborough against a fleet of, say, a hundred fast and really up-to-date aeroplanes which could be purchased with the money spent on these lighter-than-air machines? In the first place, if the weather were fairly rough, none of our air scouts would be able to operate at all, while the hostile aeroplanes were accumulating their information unmolested, and when our machines did get out—or such of them as had not already been destroyed on the ground by the aeroplanes—they would certainly be wiped out in a few days, even if they succeeded in disposing of a few of the aeroplane before being destroyed.

Remember that though the dirigible airship which is really dirigible is several years older than the aeroplane its best records for speed and height are a long way behind. It excels only in duration, a quality which is of minor importance in warfare.

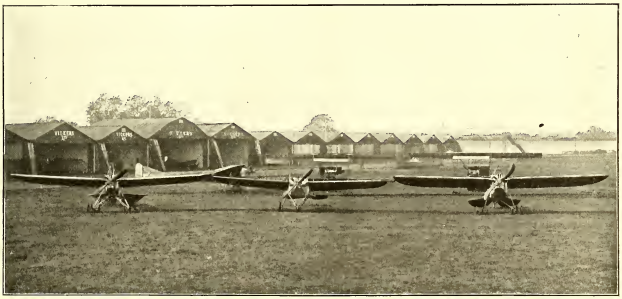
A parallel which occurs to me is that of the British "flying column"—so-called—in South Africa opposed to a Boer commando. The British



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columns put up fine duration records, they were very expensive, and very unhandy. The Boers just came and went as they pleased, they simply waltzed round the "flying columns," and did an infinity of damage to them, and they would never have been beaten but for the sheer weight of money and men we poured into their country. On equal expenditure we should never have had a look in.

There is a lesson to be learned therefrom. When we go to war with a big Power we are going into it with a people who have as much money to spend as we have, and are very much more willing to spend it—at any rate, those in authority over them have sufficient statesmanship and nerve to force the individuals who have made money out of the workers of the country to disgorge it in defence of that country. Would that we had men of sufficient courage to do likewise.—C. G. G.

Questions in the House.

Royal Flying Corps.

Mr. Joynson-Hicks asked whether, in view of the War Office proposal that civilian aviation schools and aerodromes were to be encouraged by sending officers to learn to fly there, and by engaging accommodation for military machines at such aerodromes, any officers have been sent by the War Office to learn at civilian schools; whether any arrangements have been definitely made for the accommodation of Government machines at such aerodromes; whether officers of the British Army have recently been sent by the Government to learn to fly at foreign schools; and, if so, for what reason?

Colonel Seely: Officers are required to learn to fly and to obtain a Royal Aero Club certificate before being taken for a course of instruction in military flying, but it is left to them to decide where they will go to learn. Of the 111 officers who have obtained the certificate and have been selected for the corps, 108 obtained them after receiving instruction in Great Britain at civilian flying schools. Arrangements have been made for accommodation for Army aeroplanes at four civil aerodromes, and the War Office is prepared to extend this number if other civil aerodromes in suitable places are ready to enter into agreements on the terms already arranged. No officers have been sent to learn to fly at foreign schools; I understand that one officer has recently gone to a French flying school at his own wish.

A Case of "Sabotage."

Mr. D. Lawrence Santoni, managing director of the British Deperdussin Aeroplane Company, Ltd., announces that the following extraordinary occurrence took place at the London Aerodrome, Hendon, on Sunday morning, December 22nd, 1912:—

Lieut. J. C. Porte, R.N., was flying a military two-seater aeroplane with 100-h.p. Anzani engine of the same type as won the second and third prizes in the recent British military trials on Salisbury Plain, with a distinguished naval officer as passenger, when after a half-circuit of the aerodrome the engine suddenly stopped. Lieut. Porte was then 150 ft. up over the trees surrounding the aerodrome, and it was only by great skill that he just managed to land a couple of yards inside the fence. Had the engine stopped five seconds before, he would have had no alternative but to come down on the trees, when the machine would have been wrecked, most probably with the loss of his and his passenger's life.

The engine was immediately examined, and it was found that all the working parts inside were completely smashed. On dismantling the engine a small steel nut, which was no part of the machinery, was discovered in the crank-case; this nut had jammed up the connecting rod, causing the pistons to break, and completely destroying the engine. This nut could by no possible means have got inside the engine except by wilful design, and to place the nut in the crank-case one cylinder must have been dismantled, which operation would have taken about a quarter of an hour. This outrage is the more abominable that the coward who was guilty of the act must have known that Lieut. Porte seldom flew on that machine alone, generally taking a passenger. His escape is one in a thousand, especially as on that morning a nasty wind was blowing.

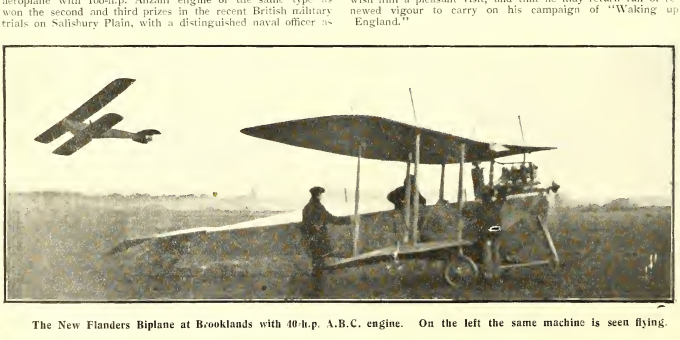
On the day previously, Saturday, December 21st, 1912, the same machine, flown by Lieut. Porte, and another military two-seater British Deperdussin monoplane, flown by Monsieur Deroye, the chief pilot of the Italian Deperdussin firm, had both been tampered with, the carburetter on each machine having been filled with water. This further extraordinary occurrence all the more accentuates the deliberate nature of the outrage. Had the machines been flown by other than experts, fatal accidents might also in this case have easily happened.

This serious matter has been placed in the hands of the Royal Aero Club for thorough investigation.

No condemnation can be sufficiently severe for the hound who is guilty of this "sabotage," and if he should be caught he will probably find that "Lynch Law" is not the exclusive prerogative of the United States.

A Deserved Rest.

After four years' continuous flying, Mr. C. Grahame-White has gone for a well-earned holiday to St. Moritz, where he and Mrs. Grahame-White will stay for about a month. All will wish him a pleasant visit, and that he may return full of renewed vigour to carry on his campaign of "Waking up England."



The New Flanders Biplane at Brooklands with 40-h.p. A.B.C. engine. On the left the same machine is seen flying.

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"1912."

BY W. E. de B. WHITTAKER.

"On sont les neiges d'antan."

The chronicling of the year's events in aviation is an affair beset with difficulties. A nice judgment and the gift of impartiality are not born in us all. No account can be complete, none would read it if it were, and if selection has to be made it is necessary to decide as to which happenings are of importance and which not. There is no guide to follow save one's own personal inclination. One rule only have I observed in the following summary of the year, and that is to treat more fully of British aviation than of that in foreign countries. The reasons for the observance of such a principle are sufficiently obvious.

There are certain general events which, though born in the year, cannot be placed definitely in any month. Public opinion, or rather any definite change in it, may be reckoned as an event, and it is these mental happenings which have no distinct date. In the course of 1912 aviation has begun to take its set place in the mental firmament of the English people. It is accepted as a minor sport of the same class as professional football—that is, to be seen and not practised. Hendon has taught London a needed lesson. The people in some dim fantastic way are also becoming aware of the necessity of equipping a naval and military flying corps. And so on. But it is not possible without the perspective of years to gauge the movement of the public brain. It moves slowly, turgidly, but nevertheless it moves ceaselessly.

January.

Owing to the prevalent bad weather, little of importance occurred during the month. On the 12th Lieutenant C. B. Samson, R.N., made a flight on a Short biplane, starting from a staging erected over the bows of H.M.S. "Africa," thus imitating for the first time in Europe the similar feat performed months before by the late Eugene Ely in the U.S.A.

Vedrines (Deperdussin monoplane, 100 h.p. Gnome) on January 15th, raised the world's speed record to 145.177 kilometres an hour, and broke all speed records up to one hour. Bathiat on a Sommer monoplane raised the speed record on January 27th to 146.44 kilometres an hour. These successes were the beginning of a brilliant series of record flights throughout the year.

February.

On February 1st, for the first time in the world's history, an aeroplane was struck by bullets, whilst on reconnaissance duties in Tripoli, the observer, Captain Mortu, being slightly wounded.

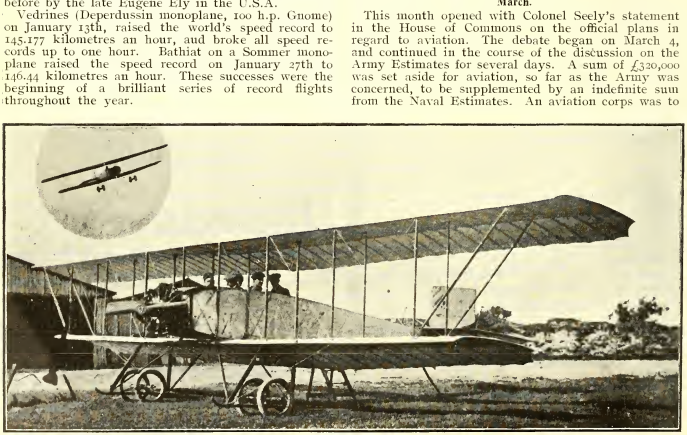
The French Estimates published on February 13th, contained a sum of 22,000,000 francs (£880,000), to be devoted to the equipment of the aeronautic section of the French army. The organisation of that corps was briefly outlined in the Chamber of Deputies, and all parties in the Chamber endorsed the Government's programme. The number of aeroplanes to be acquired during the year was 344, which number has been greatly exceeded. The dirigibles allowed for have not been constructed as yet.

Several records were broken during the month. Lieutenant Barrington-Kennett, Grenadier Guards, with Corporal Ridd, R.E., as passenger, flew on a Nieuport monoplane (50 h.p. Gnome) over Salisbury Plain for a distance of 242 miles while competing for the Mortimer Singer Prize, thus beating the world's duration record for a flight with a passenger. Vedrines at Pau, on February 22nd, flew on a Deperdussin monoplane (140 h.p. Gnome), a distance of 154 kilometres in an hour, reaching a speed of 105 miles an hour. Tabuteau (Morane monoplane, 50 h.p. Gnome) flew also at Pau, and on the following day 227 kilometres in two hours.

British aviation had until lately been remarkably free from fatal accidents. It was, therefore, the greater shock when on February 17th Douglas Graham Gilmour, an aviator of great skill, was killed at Richmond, owing to the collapse of a wing on his monoplane. The sorrow expressed in aviation circles after his untimely end testified to his popularity amongst those who knew him well.

March.

This month opened with Colonel Seely's statement in the House of Commons on the official plans in regard to aviation. The debate began on March 4, and continued in the course of the discussion on the Army Estimates for several days. A sum of £320,000 was set aside for aviation, so far as the Army was concerned, to be supplemented by an indefinite sum from the Naval Estimates. An aviation corps was to



The 100 h.p. Anzani-Caudron Six-Seater, built for the Circuit d' Anjou. The left-hand picture shows the machine flying.

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Artificial and Natural Flight. By Sir Hiram S. Maxim. Price, 5s.

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THE GNÔME ENGINE COMPANY, St. Stephen's House, Westminster.

be formed, having in its ranks soldiers, sailors, and civilians. Separate from the Army and Navy, it was to be controlled in some unexplained manner known to the Under-Secretary of State. With considerable verbal facility Colonel Seely placed the scheme before the country and burked discussion by pleading the difficulties of the case. Members were not disposed to embarrass the first steps of a new movement apart from the fact that none had made himself sufficiently conversant with the subject to justify his interference. The root principle of the scheme that soldiers, sailors and civilians should work together as one body in increasing amity throughout the ages was in the view of competent critics entirely wrong and doomed the plan to failure. This it has not done, but it is probable that before many months have passed the two wings of the flying corps will come under the direct control of the Army and Navy respectively. But as matters stood any action was of value rather than none at all. Next year will be the time for stringent criticism.

Six aeroplane squadrons were to be equipped with eighty-four aeroplanes allowed for in the Estimates. Colonel Seely spoke of purchasing 131 aeroplanes, but when cross-examined had no idea as to the date of purchase. Now at the end of the year not one of these squadrons is fully equipped with aeroplanes or personnel, whilst transport is notable by its almost entire absence. Two of the squadrons have no establishment whatsoever. The Navy, to whom aviation is at the moment of much less importance than to the Army, has purchased a number of excellent machines and has prepared a plan of operations to which it will rigidly adhere. The only excuse for the delay in the military wing is the Secretary of State for War.

In this month "Le Matin," a far-seeing and patriotic French paper, started a national subscription for the purchase of aeroplanes for the Army and Navy.

On the 7th Henri Salmet flew on a Blériot monoplane (50 h.p. Gnome), from London to Paris in a little over three hours, having made one stop en route, returning to London in three stages on the two following days.

Vedrines on the first day of the month flew in a Deperdussin monoplane (140 h.p. Gnome), 164 kilometres in one hour, beating all intermediate records. The following day he flew a circuit at almost exactly 100 miles an hour. Tabuteau on March 1st, flying a Morane monoplane (50 h.p. Gnome), covered 250 kilometres in 2 hours 7 minutes 54 seconds. On March 11th he flew from Pau to Paris in one day, making two descents on the way, a distance of 720 kilometres. Frantz, flying a Savary biplane (70 h.p. Labor) with two passengers, rose to a height of 2,125 metres.

The Monaco Hydro-aeroplane meeting (the first in the world), was held during the last six days of the month, and ended in a victory for a Henry Farman biplane piloted by Fischer.

April.

On Good Friday the Hendon Aerodrome started a series of flying meetings, which have continued at weekly intervals ever since. Despite unfavourable weather great success has attended the bold plan which has done more to popularise aviation than any of the great races or exhibitions of the past few years.

Little of note occurred during the confines of this month save a number of interesting over-sea flights. On April 2nd Mr. Gustav Hamel, accompanied by Miss Trehawke Davies, flew from Hendon to Ambletense on a 70 h.p. Gnome-Blériot, Miss Davies thus being the first woman to cross the Channel in an aeroplane. Fourteen days later Miss Harriett Quimby, an American journalist, flew the Channel alone, also on a Blériot monoplane. On the 18th Mr. Damer Leslie Allen was lost whilst attempting to fly from Holyhead to Dublin on a Blériot monoplane. Four days later Mr. D. Corbett Wilson flew from Fishguard to Enniscorthy, and on the following day Mr. Vivian Hewitt crossed from Holyhead to Dublin. Both these flights were made on Blériot monoplanes.

On the last day of the month the Under-Secretary of State for War (Colonel Seely), interviewed at the House of Commons all those connected with aviation who cared to attend. He made a long statement on the Royal Flying Corps, and then asked for criticisms, the more pertinent of which he ignored. This interview gave very little satisfaction to those who attended.

May.

The second week in May saw the Royal review at Weymouth. During the week the naval aviators made several successful flights over the Royal yacht and the fleet, in some instances arising from and alighting on the water. One ascent was made from the deck of H.M.S. "Hibernia," temporarily mothership of aeroplanes.

In the following week their Majesties the King and Queen inspected the nucleus of the Royal Flying Corps (military wing) at Farnborough. Various flights of excellence were made.

The final regulations of the military aeroplane competition were issued during the month relaxing some of the more stringent rules laid down in the preliminary notice.

Owing to an error of judgment Edward Victor Beauchamp Fisher and his passenger, an American named Mason, were killed whilst flying on a monoplane at Brooklands.

On the last day of the month Wilbur Wright, one of the pioneers of aviation, died of typhoid fever at Dayton, Ohio, U.S.A. A man of genius and of strong character, the progress of aviation is retarded by his death.

June.

Following the example set by France, Italy had inaugurated a public subscription for the purchase of military aeroplanes which by this month had reached a total of £80,000.

On Saturday June 8th the first aerial Derby was held—a race over an eighty mile circuit of London. Messrs. Sopwith, Hamel, Moorhouse and Valentine all finished in the order given. Owing to a misunderstanding Mr. Sopwith was disqualified, though on the hearing of his appeal several months later, he was declared the winner. He thus received the gold cup presented by the "Daily Mail" and £200.

The great race of the year—the Grand Prix of the Aero Club of France—took place over a course in Anjou, with Cholet, Saumur, and Angers as turning points. All types of machines were in the list, and most of the world's greatest pilots were entered. The race was in two parts, and was flown on June 16th and 17th. The weather was most unfavourable, a wind of 45 miles an hour prevailing on both days. As a result only one pilot, Roland Garros (50 h.p. Gnome Blériot) completed the course. M. Bridejonc de Moulinais made a splendid attempt, but was disqualified at the end of the first day. Helen, Bedel, Legagneux, Espanet, and Hamel, the three last with passengers, all made attempts. This race proved the great advance made by the science of aviation during the previous two years.

On the 18th, at Issy les Moulineaux, the Astra dirigible "Eclaireur Conté" rose to a height of 10,000 feet, thus creating a record.

W. D. Johnston, a popular English pilot, was killed on June 14th at Eastchurch whilst riding a motor bicycle. Hubert Latham, one of the greatest figures in practical aviation, was killed on June 7th by a buffalo on the banks of the Congo.

July.

July has very little of the singular to relate in its aviation history. A great amount of flying was done, but chiefly of the steady day-by-day nature.

Mr. Grahame-White flew the Channel on a Farman hydro-biplane with Mr. Carr as a passenger on July 6th. This was the first cross-Channel flight on a hydroaeroplane.

Legagneux and Frey carried on a friendly rivalry during the month for the passenger-carrying speed record. Legagneux, flying a Zens monoplane (80 h.p. Gnome), with a passenger on July 4th, covered 150 kilometres in 1 hour 13 minutes 4 seconds, whilst Frey on an Hanriot monoplane (80 h.p. Gnome), also with a passenger on July 10th, covered the same distance in 1 hour 7 minutes 19 seconds, also carrying the records for the shorter distances. Legagneux, returning to the attack a week later, beat the long-distance record by 9 seconds, and captured all the shorter distances.

On July 2nd the Vaniman airship "Akron" exploded in mid-air, at Atlantic City, U.S.A., killing its crew of five.

Three days later—on Salisbury Plain, near the loneliness of Stonehenge—Captain Eustace Broke Loraine, Grenadier Guards, and Staff-Sergeant R. H. V. Wilson, R.E., both of the Royal Flying Corps, were killed whilst flying on a Nieuport monoplane. The exact cause of the accident will never be known. These deaths were the first to occur whilst flying on the King's service.

August.

The military aeroplane competition, the great event of the year so far as England was concerned, was in full swing throughout the month. That most strange procrastination which affects even those to whom most notice is given, prevented many of the best-known competitors from making an appearance, or at least from doing justice to their machines. Some machines of which much was expected, failed to make a reasonable performance. The weather throughout was unfavourable, and such flights as were made were of the higher excellence in consequence. No purpose would be served by giving even the briefest account of the different events. The trials were marred by the sad accident which took the life of Mr. R. C. Fenwick, the designer and pilot of the Mersey monoplane, a machine of singular promise. He was killed whilst making a flight in a tricky wind on August 13th. The trials ended with the close of the month with Mr. Cody as undoubted victor. On August 12th Mr. de Havilland, of the Aircraft Factory, flying a biplane (B.E. 2) with Major F. H. Sykes, Royal Flying Corps as passenger, rose to a height of 9,500 feet, thus breaking the British height record with or without passenger.

On August 4th Mr. W. B. R. Moorhouse flew in a Bréguet biplane (110 h.p. Canton Unné), accompanied by his wife and Mr. Ledeboer, from Douai to a village in Kent. The weather was unfavourable, and the Channel was crossed in fog and rain. The biplane was badly smashed in landing owing to the gale of wind.

Mr. Frank McClean, to demonstrate the excellence of British design and workmanship, flew on August 10th from Eastchurch to Waterloo Bridge on a Short hydro-biplane, following the course of the Thames throughout the flight. Leaving his machine on the river for the night he commenced his return flight on the following day, only to be brought down near the Tower Bridge through a side slip.

During the week following, August 24th, a hydro-aeroplane meeting was held at St. Malo, including a race to Jersey and back. The Astra, piloted by Labouret, was at the head of the final classing. Weymann, flying a Nieuport hydro-monoplane (100 h.p. Gnome) won the St. Malo-Jersey-St. Malo race.

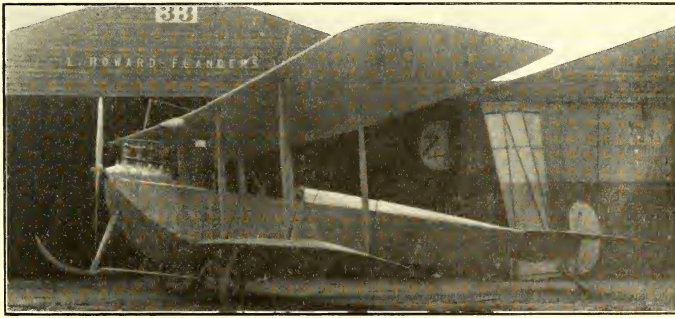
Mr. Lindsay Campbell, an Australian pilot, was killed through an error of judgment whilst flying a Bristol monoplane at Brooklands on August 3rd.

September.

The Army manœuvres were held during this month and were the first in Great Britain in which aeroplanes took a proper part. Unfortunately two serious accidents occurred within a few days, which had a depressing effect on the official view of aviation for the time. On September 7th Captain Patrick Hamilton and Lieutenant Wyness-Stuart (passenger) both of the Royal Flying Corps, were killed at Willian through the disintegration of the 100 h.p. Gnome engine fitted into their Deperdussin monoplane. Three days later Edward Hotchkiss and Claude Bettington (passenger), both of the Royal Flying Corps (Reserve) were killed near Oxford owing to the collapse of a wing of their Bristol monoplane. As a result of these accidents the War Office has forbidden any flights to be made on monoplanes until the report of a recently-appointed commission is received.

During the second week of this month a hydro-aeroplane meeting was held at Tamise, resulting in a victory for Renaux on the Maurice Farman hydro-biplane.

Three great records were created during the month,



Side view of the Flanders biplane with 40-h.p. A.B.C. engine.

the first by Roland Garros, who rose on a Blériot monoplane (50 h.p. Gnome) to a height of 16,400 feet at Tronville, on September 6th the second by Legagneux, who on September 25th took a Morane Saulnier monoplane (50 h.p. Gnome) to a height of 18,635 feet, and the third by Fourny, who on September 11th flew 632 miles in 13 hours 17 minutes on a Maurice Farman biplane without making a descent.

On September 21st Henry Jacob Delaval Astley was killed at Bellfast while flying a Blériot monoplane. Finding himself above the crowd at a low altitude he made a sharp turn, over-banked, and then in order to avoid the crowd continued the turn and increased the bank, sideslipping and crashing to the ground just outside the barrier. Had he had less chivalry he need not have died. And there is no finer epitaph.

Charles Voisin, one of the famous brothers whose names were great in the early days of aviation, was killed on September 28th through the overturning of his motor-car at Belleville-sur-Saone.

October.

The events of the month were the taking of the two Michelin prizes—the cross-country and the duration. The first was captured by Mr. Cody on the 12th, when he made the required circuit of 186 miles on his biplane (100 h.p. Green), in 3 hours 26 minutes, and the second by Mr. Harry Hawker, who flew on a Sopwith biplane (40 h.p. A.B.C. engine) at Brooklands in 8 hours 23 minutes on October 24th. On the same day Mr. F. R. Raynham, flying an Avro biplane (60 h.p. Green engine), remained 7 hours 31½ minutes in the air before lack of oil caused his descent. Mr. Hawker's flight constitutes a British duration record.

On October 14th a dirigible balloon of unknown nationality, flew in the vicinity of Sheerness about eight o'clock in the evening.

November.

Throughout the month the question of the mysterious airship interested the aviation world. Questions were asked in the House of Commons with the usual non-committal replies. Each of the cheaper newspapers "discovered" the scare and filled columns with ill-digested theories.

The weather throughout the month was unfavourable to flying.

December.

On the 11th Garros, who had for weeks been attempting to recapture the height record, rose on a Morane Saulnier monoplane (50 h.p. Gnome) at Tunis to a height of 19,000 feet, thus easily beating Legagneux. A week later he flew on the same machine from Tunis to Marsala (Sicily), across the Mediterranean, en route for Rome, which he reached on December 22nd.

Two bad accidents gave an unhappy finish to the English year. On Sunday, December 15th, Lieutenant Wilfred Parke, R.N., and Arkell Hardwick (passenger), were killed at Wembley, whilst flying a Handley Page monoplane, owing to an error of judgment. On Christmas Eve, Edward Petre, whilst attempting to make a non-stop flight from Brooklands to Edinburgh, on a Martin-Handasyde monoplane, fell at Marske-by-the-Sea in Yorkshire, and was killed. This accident was directly due to the inclement weather.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," War Office, December 24th:—

Special Reserve of Officers.

Royal Flying Corps, Military Wing.—Second Lieutenant (on probation) Geoffrey de Havilland is confirmed in his rank.

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Lieutenant F. F. Waldron (19th Hussars), Lieutenant G. B. Stopford (6th Battery, Royal Field Artillery), Lieutenant R. B. Martyn (2nd Wiltshire), and Lieutenant R. Cholmondeley (1st Battalion Rifle Brigade) have been appointed to the Royal Flying Corps as flying officers.

Lieutenant the Hon. J. D. Boyle (1st Battalion Rifle Brigade) and Lieutenant A. H. L. Soames (3rd Hussars) have been selected on probation for the Royal Flying Corps.

Admiralty Appointments.—Lieutenants—J. W. Seddon, to the "Actæon," as flight commander, Royal Flying Corps, for charge of Isle of Grain Air Station; S. D. A. Grey, to the "Actæon," additional, as flight commander, Royal Flying Corps; C. J. L'Estrange Malone, graded as flight commander, Royal Flying Corps; F. L. M. Boothby and H. L. Woodcock, to the "Actæon," additional, as flying officers, Royal Flying Corps (Airship Section), to date December 31st; J. T. Babington, to the "Actæon," additional, for aviation course at Eastchurch, to date January 3rd.

Royal Marines.—Captain, R.M.L.I., R. Gordon, to the "Actæon," additional, as squadron commander, Royal Flying Corps, to date December 31st.

Lieutenant, R.M.L.I., T. S. Creswell, to the "Actæon," additional, for aviation course, to date January 3.

There is a rumour that Filey is to be developed as a naval aerodrome.

Commander Masterman, R.N., commanding Airship Squadron (Naval Wing), Royal Flying Corps, took his pilot-aviator's certificate on December 21st at Etampes, flying a Henry Farman biplane. His first flight alone took place on the previous day.

FRANCE.

M. Deutsch de la Meurthe purchased, at the conclusion of the Saint Malo hydro-aeroplane meeting, the large Astra biplane (100-h.p. Renault) which was classed first. He has now, through the "Association Générale Aéronautique," of which he is president, presented this machine to the French navy.

The aviation school at the Avor Camp in the Department of the Cher is developing rapidly under the command of Captain Bellenger, with Lieutenant-Aviators de Malherbe and Le Bleu as assistants. The hangars, in which are stored fifteen monoplanes, are of stone with cement floors. Extensive workshops have been erected, and electric light is established throughout. The efficiency of Captain Bellenger is undoubted.

An aviation centre has been organised at Vandoevre, near Nancy, under the command of Lieutenant-Aviator de Rose, with Lieutenant-Aviators Vogoyau, Vitrat, Glaize and Vanduyck on his staff.

The Marquis de Lareinty-Tholozan, delivering a Maurice Farman biplane at Verdun, flew to that place on December 18th, with a passenger, in 2 hrs. 25 mins.

Colonel Hirschauer, Permanent Inspector of Military Aeronautics, was on December 19th promoted to the rank of General de brigade.

During the fortnight before Xmas the officers attached to the Belfort escadrille reconnoitred the Alsace frontier ceaselessly on their Blériot monoplanes. That this close watch is necessary is accepted as an axiom by the military authorites and the French public.

A Nieuport monoplane (Clerget rotary motor, 60 h.p.) piloted by Gobé flew for two hours with 280 kilos. weight before a military commission at Pau. It passed its tests successfully and was accepted for the French army.

The Ministry of Marine has offered a prize of 50,000 francs for the most successful hydro-aeroplane at a meeting to be held on August 20th, 1913. They intend to purchase the winning machine for 60,000 francs and the second for 30,000 francs.—W.

At a meeting of a committee, composed of the senior officers of the French aeronautical service, the purchase of "avions" for 1913 was discussed, and a proposition was submitted to the Minister for War concerning the types to be bought out of the Budget vote, and out of the funds of the public subscription.

It is authoritatively stated in the French press that more than 400 aeroplanes of war have been bought during 1912 by the French Army, and that this figure will be greatly exceeded in 1913.

Some time ago Lieut. Saunier, of the military aeronautic laboratory at Chalais-Meudon, made a flight of half an hour

on the "aero-stable," invented by the brothers Moreau, the pilot flying the whole time with his arms folded in a 14 m.p.h. wind. As a result of this test the French Army has ordered one of these machines, and other orders are likely to follow.

GERMANY.

A military aviation station is in course of formation at Posen at a cost of 2,000,000 marks.

The Ministry of Marine intends to form an aviation station at Wilhelmshaven to replace that at Putzig, on the Baltic.—W.

The German sergeant who crossed the French frontier last week in his endeavour to fly from Mulhouse to Strassburg, is the third member of the German army to have landed on French soil. The first aviator was the late Captain Engelhardt, who descended in France in 1910, having lost his way, and in the spring of 1912 the same fate happened to Lieutenant Pretzell, a young officer attached to the Strassburg military station for a course of instruction. Both officers as well as the sergeant received a very friendly reception from the French authorities and were given no cause of complaint whatever. Remarkably enough, balloonists have had a very different tale to tell in the majority of cases.

A statement has now been published of the result of the national subscription in Germany for the furtherance of aeronautics and aviation, the sum total being 7,234,500 marks. Of this money certain conditions as to its disposal were attached to 1,975,306 marks, while the committee is at liberty to spend the remainder as it thinks best. Berlin alone only subscribed 410,828 marks, a fact that has caused some comment, all the more as Hamburg raised more than half the money that was collected in the metropolis. Bavaria subscribed 187,419 marks, Saxony 95,530 marks, and Alsace-Lorraine 81,268 marks, Baden 94,266 and Wurtemberg 78,271 marks. The kingdom of Prussia naturally tops the list with 3,797,617 marks.—B.

ITALY.

The Ministry of War has ordered the formation of several schools of aviation at which pupils of the public lycées can be trained in aviation. Such pupils as receive a diploma will be given the opportunity of accepting commissions in the Italian army.—W.

CHILI.

The Ministry of War has decided to set aside a sum of 3,500,000 francs for the formation of a military aviation school and for the purchase of aeroplanes and dirigibles.—W.

RUSSIA.

The official report of the committee controlling military aviation has just been issued, and covers the period from February, 1910, to September 1912. During those months, out of a sum of 1,610,000 roubles, 1,100,000 has been expended on the purchase of 90 aeroplanes, and 210,000 roubles on the Sevastapol aerodrome. One hundred and one officers have been trained at the latter place, out of which 23 have obtained the military brevet and 60 that of the F.A.I. One thousand officers have applied to be attached to the Flying Corps.

A Henri Farman biplane has just passed its tests for the Russian army at Buc. It is fitted with a mitrailleuse.

On the night of December 18th an aeroplane with two searchlights was seen flying near the Russian village of Severez and over the Austrian frontier. This system of aerial espionage is growing, though what interest Austria has to serve at the moment by such reconnaissance is difficult to see.—W.

BRAZIL.

The Chamber of Deputies have been considering an Act for the formation of a military school of aviation. It is suggested that two French professional aviators should be employed as instructors, and that three dirigibles, two aeroplanes, and one hydro-aeroplane should be procured, also a battery of guns capable of acting against aeroplanes.

It is understood that the Government intend to organise an international aviation meeting at which they will offer a prize of 200 contos of reis for the invention of a safe aeroplane, and 125 contos of reis for a motor capable of using alcohol as fuel.—W.

Lower Deck Pilots.

The lower-deck ratings of the naval wing of the Royal Flying Corps have been having quite a busy time lately, several of them having taken their pilot's certificates. At Eastchurch on the Short biplanes used by the naval school, Engine-room Artificer Susans, Leading Seaman Prickett and Shipwright Edwards have all become qualified aviators in the last few weeks, and at the Central Flying School on Salisbury Plain, Petty Officer Andrews distinguished himself by taking his certificate on an Avro biplane, which is very much faster than the average school machine, flying between 60 and 63 miles per hour, so that he must be more than ordinarily clever. The system of training petty officers and warrant officers in the Navy to fly is a thoroughly wholesome one, for these men have charge of the repair work, and, knowing what flying actually is, they are much more likely to be careful about the work they supervise, especially as they may be called upon at any time to take out a repaired machine and see whether it is really right.

The R.A.F. "Warplane."

The experimental biplane, which has been reported in the daily press as a new type of "warplane," at present under construction at the Royal Aircraft Factory, is now approaching completion. It consists briefly of a biplane with a short fuselage on the lower plane, in which the engine is placed in front and drives a shaft which in its turn drives a geared-down propeller at the rear of the planes through a gear-box. As at present intended the tail of the machine is fixed to a tube of large diameter which passes into the hub of the propeller and terminates in a running bearing in the gear-box, the whole



Front view of the 40-h.p. Flanders biplane.

arrangement being held in place by bracing wires carried to the planes in such a way as to prevent the tail from twisting.

This idea does not strike one as possessing any particular advantage over the ordinary tail-boom system, for if the propeller should burst it is quite as likely to cut the bracing wires as it would be to fracture the tail booms, and there is the added possibility of the bearing between the gear-box and the tail spar seizing up and collapsing the whole arrangement. The old de Pischoff arrangement of running the propeller on a fixed hub and bolting the tail spar solid to that hub, seems superior. The engine to be used is a Chenu, but it is said to be of a later pattern than those which gave so much trouble during the Military Aeroplane Competition, and it has already done some useful tests runs at the Factory.

The Monoplane Report.

It is understood that the report of the Royal Commission appointed by Colonel Seely to investigate the supposed danger of monoplanes has now been prepared and its publication may be expected at any moment. Officers of the Royal Flying Corps and the officials of the Royal Aircraft Factory are already in possession of the report, and certain alterations or additions to all monoplanes at present in the possession of the Royal Flying Corps will be made at the Factory.

A Wing-Warping Experiment.

It is reported that an interesting experiment has been carried out at the Royal Aircraft Factory at Farnborough with a wing of one of the "B.E." biplanes, in order to find out the amount of warping a wing of this type will stand before anything gives way. It is understood that the wing was loaded with sandbags and the rear spar was connected to a mechanical arrangement, driven by the back gear of a lathe, which kept the spar moving as if the wing were being perpetually warped. A counter was fitted to show the number of times the warping motion took place. No figures have as yet been published as to the results.

A Searching Test.

It is understood that the 80-h.p. Gnome engine which was originally fitted to the Bristol monoplane bought by the War Office after the Military Aeroplane Competition and damaged by the late Mr. Claude Bettington just prior to his death on its twin machine, was submitted some time ago to a test practically to destruction at the Royal Aircraft Factory. It is said that it did one run of twenty-three hours non-stop and that afterwards a number of comparatively long runs were done, parts which failed being replaced from time to time. A detailed report of these trials would be decidedly interesting and most useful to aeroplane constructors in this country.

Mr. Howard Wright's Plans.

Mr. Howard T. Wright, who is, of course, well known as one of the pioneers of aviation in this country, has joined the firm of J. Samuel White and Co., Ltd., of Cowes, the famous builders of torpedo-boats and destroyers. Under Mr. Wright's control, an aeroplane department is to be opened, and aeroplanes, hydro-aeroplanes, and motors will be built. The first machine will probably be a hydro-aeroplane fitted with the new type of plane recently patented by Mr. Howard Wright, and tested by M. Eiffel with somewhat surprising and highly satisfactory results. A number of novel, and at the same time practical, points of design are embodied in the design of the machine, which should make its appearance before many weeks are past. The chief aim of the designer of the new planes has been a great range of speed without undue loss of efficiency. The successes of the early Howard Wright biplanes, on which the £4,000 De Forest Prize was won, and the monoplanes, such as that on which the Hon. Alan Boyle made the first cross-country monoplane flight in England, are sufficient guarantee that sound workmanship and common sense will go far towards making the new machines a valuable addition to the growing list of British-built aeroplanes.

Christmas Flying on Windermere.

On Wednesday, December 18th, though still gusty, the "Seabird" was out flying well. Mr. Stanley Adams reports the new propeller sweet in running and quite satisfactory. Later, Lieut. Trotter, R.N., was out with "Seabird." After a short successful flight, he was just rising for a second when a side gust struck him and forced the left wing into the water, breaking it right off. The water saved Mr. Trotter from all damage, but "Sea Bird" retires into hospital for some time.

An Australian Aeronaut over London.

After various ballooning experiences in Australia and America, "Captain Penfold," the Australian aeronaut, made his first balloon ascent in Europe on December 23rd. Attired as Father Christmas, he left Battersea Gas Works at one o'clock in a 45,000 cubic feet balloon piloted by Mr. Henry Spencer. He intended to land by parachute in St. James's Park, where he was to deliver packets of Sandow's chocolate to the assembled multitude. The wind was too high to make such a descent advisable. In any case, the ground was hidden by thick clouds. He was released from the balloon when in the vicinity of Chelmsford, landing after a drift of three miles near Little Baddow village. The ascent was arranged by "Aeronautical Accessories."

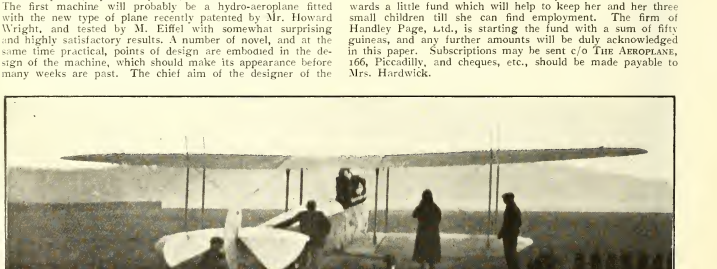
One wonders whether such a descent even in a dead calm should be legally permitted over such a circumscribed area as St. James's Park, and one is inclined to think that recent aerial legislation should be extended to dirigible and non-dirigible balloons so far as big cities are concerned, besides being made to apply permanently.

Mr. Percival's Move.

It is announced that Mr. Percival is giving up his establishment at Brooklands and is to join Mr. J. W. Dunne in his experiments with the Dunne automatic stability machines. Everyone will be extremely sorry that Mr. Percival is leaving Brooklands, but the Blair-Athol Syndicate, of which Mr. Dunne is the head, are to be congratulated on acquiring a most valuable coadjutor. Mr. Percival is selling his 35-h.p. Caudron and his 60-h.p. E.N.V. engine, and is willing to consider any reasonable offer.

For Mrs. Hardwick.

The widow of the late Mr. Arkell Hardwick, who was killed at Wembley in the Handley Page monoplane, has been left without adequate support, and it is hoped that some of those who knew and liked her husband may care to subscribe towards a little fund which will help to keep her and her three small children till she can find employment. The firm of Handley Page, Ltd., is starting the fund with a sum of fifty guineas, and any further amounts will be duly acknowledged in this paper. Subscriptions may be sent c/o The Aeroplane, 166, Piccadilly, and cheques, etc., should be made payable to Mrs. Hardwick.



The 40-h.p. A.B.C.-Flanders biplane getting ready to start at Brooklands.

The Accident at Marske.

On Christmas Eve, Edward Petre, flying a Martin-Handasyde monoplane, left Brooklands at 9.15 a.m., intending to fly without a stop to Edinburgh. On reaching Marske, which is half-way between Saltburn and Redcar, on the Yorkshire coast, he attempted to land, evidently because of the gale which was blowing, and was killed in doing so.

The distance covered from the start, a matter of nearly 250 miles, together with the appalling state of the weather, lead one to assume that the unfortunate pilot was worn out by his fight against the wind and was physically unable to control the machine any longer. The story published in some papers that just before the smash someone saw the pilot throw up his hands and let the machine go, is quite possibly true, and might be accounted for by sheer physical collapse from fatigue, though such a gesture would also be natural if a wing gave way.

It may be remembered that when the late D. G. Gilmour was killed on a similar machine the story was put about that he became insensible while flying, though the nature of the accident made the truth of such a story almost impossible. In this case, however, such an effect seems possible.

The Cause of the Accident.

Unhappily, one is led by the weight of the evidence to believe that the direct cause of the accident was that the machine broke in the air, as in the case of the late D. G. Gilmour. The following report of the important evidence at the inquest is taken from the "North Eastern Daily Gazette," of December 26th.

This reads as follows:—

Wm. Durance, co-op. store manager, New Marske, told the jury that on Tuesday, about 11.30, he was half-way between Marske and New Marske, and saw the machine approach. At first he thought Petre was making a good headway against the wind until he got overhead, and then he could see it was very difficult for him, as the wind held him in check every now and then. He passed over his head, and seemed as if he was going to alight. At the time he saw him first he was about 130 yards high, but he came much lower, and this made him think he was trying to alight. He seemed to steady his machine as if to descend, and a sudden gust of wind appeared to catch the machine, and the wings snapped and dropped, and he came straight down at once.

Witness did not see whether Petre fell out of the machine.

Deceased was almost overhead when the wings collapsed, and the aeroplane was then about 300 feet above him. Immediately he crossed into the field where the aviator fell, and found deceased laid under part of the wreckage. There were no signs of life when witness got to the help of the airman. Three other men were on the spot almost immediately and gave assistance. The aeroplane was smashed to pieces and was a complete wreck. Part of it was embedded in the ground. In the opinion of witness it was the high wind and gusts which caused the machine to collapse. At the time there was a very high wind.

By a Juryman: He heard nothing but the buzzing of the machine. He heard no explosion, only the cracking of the wings, nor did he see any debris flying. He was on the scene of the accident in a minute. Deceased was lying on his left arm.

In answer to Mr. Handasyde, Mr. Durance said that when he first saw the machine he was only about 250 yards from the spot where deceased was killed. The aeroplane was coming towards him as if the aviator was going to cross the railway and go in the direction of Eston Hills.

When the wings collapsed the machine had descended 20 yards. He was almost sure that he intended to come down into a field. The engine steadied as if Petre was about to come down, and the wings then collapsed. The aeroplane seemed all right just before the accident occurred. Directly the wings snapped it tilted right over, and came down topsy-turvy. He could not say whether it fell on its side or head first.

Mr. Handasyde asked if witness did not think the machine was struck by a gust of wind, and was then rolled over on its side, as it was not possible for the wings to drop down, as they would go up, but Mr. Durance said that the impression he formed was that the wings snapped.

P.C. Linskill, the next witness, said when he first saw the aeroplane it was coming from the direction of Saltburn, and was proceeding smoothly. A gust of wind appeared to catch it when it was about 400 or 500 feet above the earth, and seemed to turn it on its left side. Witness was then about 100 yards away.

It recovered from this attack by the wind, and then, after another gust of wind it appeared to turn completely over, and dive into the ground. At once he proceeded to where it had fallen, and found that Petre had been extricated from the wreckage. He was quite dead. The body was then removed to the mortuary.

The constable, in answer to the coroner, said that he heard no explosion, whilst in answer to questions by Mr. Handasyde, witness said the wings were moved a great deal by the wind, and he thought that deceased, who was making in the direction of Eston, was intending to descend in a large field. He saw the machine turn over on its side. It wobbled and turned completely over. When it recovered from the first gust he saw the wings moved. The engines did not stop before Petre reached the ground.

George Harris Handasyde, of Weybridge, an engineer of great experience with aeroplanes, said that Mr. Martin and himself were one of the first to start in this country with aeroplanes a little over four years ago. They knew Mr. Petre for the last four years. He was one of the very first men in aviation, and had great experience in the management of machines. He was one of the most fearless pilots in the kingdom, and he had known him make a great number of flights. As a matter of fact he flew every day. On Tuesday morning when he left Brooklands he was to fly to Edinburgh without a stop and he started at 9.10 in a Martin-Handasyde monoplane. It was a 60-h.p. three-seater machine. The normal flight was 685 miles. Probably he was travelling on this day 80 miles an hour. It was calculated he would reach Edinburgh in 4½ hours. Mr. Petre had had no serious accidents prior to this. He had seen the machine, and had heard the evidence, and he concluded that owing to Petre flying so low he was looking for a landing place. He had evidently got into a gale, and realising that he could not reach Edinburgh, he descended to a distance of 500 feet to look for a landing-place. Crossing country the usual height was 1,500 to 2,000 feet.

Witness was of the opinion that deceased was taking a turn when the machine was caught by a series of gusts and turned over. He was too low to have any chance of recovering. He thought the machine came down sideways, and did not turn over until it reached the ground. All the stays of the wings were intact, and he thought it was clear from the constable's evidence that the machine fell intact. It would hit the ground at 80 or 90 miles an hour.

By the Foreman of the Jury: It was unlikely that owing to too high a wind deceased would stop the engine. It was possible he might, but he did not think it probable. Mr. Petre was a man of 6 ft. 1 in., and nearly 14 stones. He was a very big man and particularly muscular.

The Coroner said that he thought the jury would have little difficulty in finding a verdict on the evidence. Flying was in its infancy, and there must be a certain amount of danger in following it, but it seemed from the evidence of Mr. Handasyde that if deceased had been far enough up he would probably have been safe. There was little doubt that he had been intending to descend on account of the gale, and that it was caught by one of the gusts which brought down the machine, with the result he was killed instantly.

The jury, in returning a verdict of "Accidental death," expressed sympathy with the relatives.

The evidence given by the witness Durance is borne out by these additional facts. The day after the accident—Christmas Day—a friend of mine who was spending Christmas at Saltburn, went to Marske, investigated the occurrence, and sent me the following report:—"The Vicar tells me he saw the aeroplane come over from Saltburn and pass over the village at about 200 to 300 feet, going quite steadily. After passing to the west of the town it seemed as if the windward wing [presumably the left] went up, the leeward down, and then both folded back on the fuselage, and she dived head first and perpendicular.

"The gatekeeper at the railway crossing says the machine came over the village at about 300 feet up and made a dip down to about 200 feet, then rose, then dipped again and rose again. About 200 yards farther on he was still watching it when he heard a loud cracking noise and the wings folded back on the fuselage and she dived straight down.

"I saw the place and the machine where it was housed in a shed. She was utterly smashed to small bits, only the fuse-

age back of the wings being left intact. She buried her nose three or four feet in the ground—a grass field. Wind was S.S.W., very strong, more than half a gale. Time of accident 12.15. Both witnesses say the machine broke in the air and fell nose down. The gatekeeper thinks she turned slightly down wind at the time of the cracking noise. He also said she seemed unsteady after crossing the village street."

Writing on the following day, the same correspondent says: "The gatekeeper of the railway crossing, Plews, stood not more than 300 yards from the site of the accident. The distance from the village street to the smash is about three-eighths of a mile. The country there is flat from the hills to the sea, with sand dunes. The hills stand back about 1½ miles from the seashore and run up to 400 feet high. They lay to windward of the aviator and on his left hand.

Now, judging from the local paper's report, apparently neither the Vicar, nor Plews the gatekeeper, was called at the inquest, but it will be seen how closely their accounts agree with those of Durance. More strangely still, the accounts of all three tally almost exactly with those of eye-witnesses of the Gilmour accident, especially with the evidence of one man who was not called at the inquest on Douglas Gilmour, a man who was as used to watching aeroplanes as anyone who lives at an aerodrome.

A Question of Design.

A peculiar point in both accidents is that certain witnesses spoke of the wings "dropping"—an apparent impossibility unless one presumes that the butts of the spars first lose power to the fuselage. If one does permit that assumption it follows that the wings, towed forward by the big main cables to the chassis, would act as unbalanced kites and "cut" edgeways under the machine. In the Gilmour accident the machine was lying after the smash with the left wing on the right-hand side of the machine and the wreck of the right wing in a line with the fuselage, in such a position that it could only have got there if it had come down underneath the machine, and the butt of one spar was deeply embedded in the ground. Further, if one wing broke, and the butt of the other remained fixed to the fuselage, the machine would come down sideways, or at any rate the remaining wing would pull the chassis sideways as it folded upwards, whereas in the Gilmour smash the chassis remained relatively in its correct position to the fuselage, which turned over exactly in line with the engine which was deeply bedded in the ground, showing that it struck exactly nose first. In this accident also the engine was driven deep into the ground, and the general evidence shows an unfortunate similarity to the Gilmour case.

No one admired the first Martin-Handasyde machine more than I did, and no one wrote and said more in its praise. No one to-day has greater faith in the workmanship put into these machines. But, ever since the Gilmour accident I have been convinced against my will that the wing design is at fault, and painful though it is to do so, it is my public duty to state the fact, for where men's lives are at stake friendship and sympathy for an earnest hardworking partnership cannot be allowed to gloss over possible dangers to other pilots. Whether the danger lies in the king-post method of construction, or in the wooden lattice method of internal staying between the spars, or in the method of attaching the spar butts to the fuselage, I do not profess to say, but we have before us the lesson of four fatal accidents on Antoinettes and two on Martin-Handasydes all, on good evidence, due to wings breaking in the air. And these fatalities have been not only out of all proportion to the number of these machines in existence, but even more out of proportion to the number of miles flown on each machine.

A plausible theory for the Gilmour and Petre accidents is that through continual warping of the outer ends of the wings a portion of the internal wood lattice-work came loose in one wing and pushed its way through the fabric, which thereupon burst or tore, carrying with it the rest of the lattice and the lighter ribs, and depriving the outer portion of the wing of all lift. The whole lifting power of the remainder of the wing would then come on the inner portion between the king-post and the fuselage, so throwing a terrific lifting strain onto the butts of the spars, which are not built into the fuselage, but are anchored on the top of it. The wing being, when intact, a cantilever, the normal pressure is downward at the butt of the spar, and when the strain is suddenly transferred to an upward direction, it is logical that the anchoring arrangement should give way. And, as the spars on the right are inter-connected with those on the left, if one anchor gave way it would release the other side simultaneously.

Apart from this, if the fabric was burst by the wooden lattice it would account for the cracking heard by the witnesses, and possibly for the head-first dive, but the wings would scarcely fold back, as they are said to have done.

Further, the main spars of the later Martin-Handasydes have been built up in the form of box girders, with ash longitudinals top and bottom, the sides being of three-ply wood. These have been criticised by other designers on the grounds that three-ply wood is not sufficiently reliable and may come apart in damp weather, despite most careful varnishing. This also is a possibility.

In justice to Messrs. Martin and Handasyde it is to be hoped that these questions will be thoroughly threshed out by competent engineers. The only possible satisfactory solution seems to be that one of their wings should be tested to destruction at the Royal Aircraft Factory, not by the old and foolish method of a dead overload with sand-bags, but by a system of continued mechanical warping, such as that recently tried on a wing from a "B.E." biplane, but by preference under an overload of say 75 per cent. This test should be interrupted at stated intervals so that the effect on the internal mechanism of the wing might be inspected.

To Mr. Martin, the moving spirit of the firm who built the machine, sincere sympathy is due. For years he has devoted all his time and money to his endeavours to produce a really good aeroplane. No machine has ever been so beautifully finished, and it is doubtful whether more care could possibly be expended in workmanship. It is, therefore, the bitter irony of fate that such pilots as D. G. Gilmour and Edward Petre should have met their deaths on two out of the four or five successful flying machines built by his firm. One can only hope that better luck may attend his future efforts, for we have all too few men in this country who are willing, as he has been, to give themselves and their fortunes to the cause of progress.

Mr. Petre's Career.

Edward Petre was born at Ingatestone, in Essex, in 1886, and was thus twenty-six years of age. He belonged to the great Petre family, of which the well-known Roman Catholic peer, Lord Petre, is the head. He was a cousin of the present Lord Petre and of the new Baroness Furnivall. Mr. Petre's father, Mr. Sebastian Henry Petre, of "The Bryan," Ingatestone, Essex, had five sons, of whom Mr. Edward Petre was the second. The Petres are a very ancient Roman Catholic family, who were already established in Essex in the reign of Henry VII. Thorndon, near Brentwood, is the seat of Lord Petre. Educated as an architect, Edward Petre took up aviation some two or three years ago and started to build a monoplane in partnership with his brother Henry, who is now on his way to Australia to supervise the building of machines and the training of pilots under the Commonwealth's new scheme for aerial defence. The statement published in some papers that the late Edward Petre was in the service of the Commonwealth is evidently due to confusion between the two brothers. Edward was the bigger, fairer, and younger of the two, and they were best known among aviators by their nicknames, Henry being "Peter the Monk," and Edward "Peter the Painter."

After exhibiting their machine at Olympia early in 1910 they brought it to Brooklands, where they finished it and succeeded in making some short straight flights with it. The machine was quite original. In general outline it resembled its predecessor, the Antoinette, and its successor the Martin-Handasyde, but the propeller was right at the tail, as in the recent Paulhan torpedo, and was driven by a long shaft from an engine placed where the pilot or passenger ordinarily sits, the pilot in this case being at the leading edge of the wings—an excellent place for observation, but dangerous in other respects. Lack of engine power and finance ended their experiments, so the brothers parted company. Henry joined the Hamric school and learned to fly on the famous "Hamricaro." Afterwards he went to the Deperdussin school, and about the middle of this year he joined Mr. Handley Page at his works at Barking. Edward, after the separation, worked with Mr. Howard Flanders, and did his early flying on the Flanders monoplane. Afterwards he joined Mr. Handley Page—prior to Henry doing so—and carried out the early experiments with the 50-h.p. machine at Fairlop, in Essex, where he learned to fly properly, and to such good purpose that shortly after getting his certificate he flew the machine from Fairlop to Barking and thence through London along the Thames to Brooklands.

While with Mr. Page the brothers helped to produce the 70-h.p. Handley Page monoplane, which, owing to delay in building, was too late to compete in the Military Competition, but flew so well and convincingly at Hendon till the late Lieut. Parke's fatal accident with the late Mr. Hardwick recently. While at Brooklands with the Handley-Page machine,

Edward Petre was induced to take on the duties of pilot with Messrs. Martin and Handasyde, and since then he has made some very good flights, often in bad weather. He had rather a narrow escape some weeks ago. While flying to Farnborough his engine stopped and he was obliged to land in a rough field, where the machine turned over, and broke itself badly, but without hurting him. He was particularly fond of flying in strong winds, and of flying high, which showed that he had plenty of nerve and confidence in his machine.

Personally, Edward Petre was one of the most charming of men, and his loss is deeply felt by very many of us. His exuberant spirits and keen sense of humour made him welcome wherever he went. Also, he had a knack of turning out quaint phrases, many of which have been permanently added to the vocabulary of aviation. Unfortunately for himself he possessed a certain recklessness, which, allied to his head-strong temperament, led him to take risks which others would avoid. The fact that he started on his flight to Edinburgh when he did, on such a day, and at such a time of the year, is sufficient proof of this without citing other instances. He was a fine example of the stuff of which pioneers in all walks of life and in all ages have been made, and to such pioneers the world owes much, but there are times when they need restraining for their own good and for the good of the cause they have at heart. It is only to be regretted that there was none to restrain Edward Petre from making the attempt which cost him his life.

The deepest sympathy will be felt for the Petre family, for the deceased aviator leaves numerous relatives to mourn his loss. The funeral took place on Saturday last at Fryering Churchyard, near Ingatestone.

Prior to the interment there was a Requiem Low Mass in the chapel, and among members of the family present were the Dowager Lady Petre and Lord Petre of Thorndon Hall.

The memory of Edward Petre will remain with very many of us as that of a good friend and a worthy pioneer of aviation when others who have not taken the died as he would days are profiting by the lessons we are now learning.—C. G. G.

A Memoir of the late Mr. A. Arkell Hardwick.

As many of us knew, the late Mr. Hardwick, for all his youthful appearance and light-heartedness, had had a very varied career before he took to aviation as a livelihood, and the following note on his previous life, gathered from his father and brother show what manner of man we have lost :—

Hardwick was born near London, and when only 15 years of age he went to sea as an apprentice on one of the Australian liners. He spent three or four years at sea and had a narrow escape off the Horn when a big wave knocked him overboard and the next one washed him on board again. He went to Yokohama and also to Beira, in Portuguese East Africa. Finally he arrived at Cape Town, where he and a friend decided to go up to Buluwayo to make their fortunes in the country which the Pioneers had just taken over from Lobengula. Here he joined the Mashonaland Police, and fought in the revolt of 1896, in which he was wounded. As a result of courageous acts he received a medal and bar. The rebellion over, he went to Egypt, where he worked in the Egyptian Survey on the Nile, and the survey arrangements of the country. In the autumn of 1899 he started off again, and with another friend went to Mombassa and then to Nairobi.

Here Hardwick met an Englishman who went under the name "El Hakim," originally a doctor before he left civilisation for Equatoria. "El Hakim" had spent four years in the elephant hunting in the almost unknown country round Lake Rudolph and Southern Somaliland. Hardwick and "El Hakim" set off at the head of a caravan of 30 Swahili porters for a year's ivory trading in North Kenia. This was an unexplored region, and the party met with rich ivory and game. They later visited Lake Lorian, and although it was reported that it was a vast swamp they completely disproved the statement. For this discovery Hardwick was later rewarded with the letters F.R.G.S., F.S.A., F.R.G.I., and F.A.S., the proposal to the Geographical Society being made by Mr. J. Walter Scott, who was a brother-in-law to Dr. Livingstone. On his return to England, Hardwick gave lectures before the Royal Society, and published a book entitled "An Ivory Trader in North Kenia," in which he described his explorations in a most interesting way. Hardwick's next trip was to West Africa, where he examined the mining and trading prospects. He went from Sierra Leone to the Congo, and became interested in some West African trading ventures.

In 1907-8 he spent a year in Morocco with Mr. Lawrence Harris and Mr. Ashmead Bartlett. During this time there was a big scheme in hand for the recruiting of a force of Europeans to maintain the pretensions of Muley Hafid to the Sultanate. Hardwick went from Tangier to Fez, where he spent eight months away from Europeans, having during this time many hair-breadth escapes. He was a witness of many of the horrible executions that marked the fall of the Shereefian Empire.

He next turned his attention to another field of adventure, and left for America in the hope, he says, to make some aeronautical experiments. In 1911 he came to London and joined Mr. Handley Page. Within the last few weeks he returned from Turkey, where he interviewed the highest officials with a view to arranging an aviation scheme.

He took to flying with the same enthusiasm that he had displayed in ivory hunting. He was well versed in the Arab language, and when the Arab chiefs interviewed the King some time ago he was called upon to act as interpreter. He was one of the early pioneers of the Frontiersmen movement, being one of the founders of the Legion. While staying in Egypt he was elected a Freemason and became a founder of the Corinthian Lodge, in which he held office.

At his funeral his coffin was carried by a bearer party of the Royal Horse Guards, in which his brother is a corporal, and of the Legion of Frontiersmen. Colonel Driscoll, the chief of the Frontiersmen, was specially represented by Lieut. Clifton West. The "Last Post" was sounded by trumpeters of the "Blues." Among the numerous sender of wreaths were Major Sir Alexander Bannerman, Bart., the Reverend Mr. Parke, Mr. Handley Page, the Royal Aero Club, and the Aeronautical Society.

Hardwick was a type of the British pioneer, and we could do with more like him. He died as he would have wished—swiftly and without warning. But his widow and young family remain. It is his due that they should not be forgotten.

Soldier and Aviator.

A pathetic interest attaches to a little book entitled "Soldier and Aviator," written by Miss Ethel Hamilton, as a tribute to the memory of her brother, the late Captain Patrick Hamilton, Royal Flying Corps, who was killed with Lieut. Wyness Stuart near Gravely, on September 6, 1912, while flying to manœuvres on the too-hp. Farnborough-designed Deperdussin which had just won second prize in the Military Aeroplane Competition.

The book tells Captain Hamilton's history as an aviator, beginning with his return from India at Easter, 1911, and relates how he was among the first to realise the importance of military aviation to this country, saying "It has got to come and we have got to do it." The story of his visit to America with Mr. Dyott is told, much of it verbatim, from his own letters, which give an insight into the strength and simplicity of his character. One of his later letters gives a most interesting account of his flight on his own 60-h.p. Deperdussin on May 10, 1912, from Beaulieu to Farnborough to join the Royal Flying Corps, to which he had just been appointed. This flight, like many things he did, deserved considerable public attention, but was kept quite quiet, owing to his innate modesty. Even his flight for his "superior certificate" on July 13th passed unnoticed, though it was one of the best ever done in this country. The book concludes with the account of his fatal accident, and a quiet but deeply touching description of his funeral.

During the Military Aeroplane Competition the present writer met Captain Hamilton on several occasions, and saw him flying day after day on his old 60-h.p. Deperdussin. Few pilots impress one as being so perfectly at home on their machines as he was, and fewer still take so keen and so intelligent an interest in the applied science of flying. Even to meet him casually, as the writer did, gave one a lasting impression of his keenness about his work, while his quiet, gentle manner conveyed some idea of the personal charm he had for those who knew him well. In Patrick Hamilton the Service lost an excellent officer, and this little memoir, which is published by C. W. Daniell, Ltd., of 3, Amen Corner, E.C., comes very near to doing him justice. An added interest is given to it by the plain statement that three of Patrick Hamilton's brothers were killed in South Africa, namely, Alastair, Royal Irish Fusiliers; Kenneth, Ceylon Contingent; and Ernest, Bethune's Mounted Infantry. To lose four sons is a tragedy for their mother. To lose them in the King's service is the one possible consolation.

CONTINENTAL NOTES.

France.

A serious accident occurred at Villacoublay on December 21st. At 4.15 p.m. seven or eight machines were in the air at once, including a Brégnet biplane piloted by Collardeau with M. Jacques Delcassé, son of the Minister of Marine, as passenger. While making a turn he came into collision with a Nieuport monoplane piloted by the Siamese Lieutenant Nai-Thip. M. Delcassé had an arm and a leg broken and was taken to hospital. The two pilots were only slightly injured.—W.

M. Roger Sommer has definitely announced his retirement from aviation owing to the lack of support accorded him by the French authorities. He will in future devote himself to the management of his felt factory, which is the largest of its kind in France.—G.

France, too, now possesses a rigid airship built on the Spiess system and presented by M. Spiess, who is an Alsatian by birth, to the French Army. Built at the Zodiac works, the aerial cruiser has taken three full years to complete. Its dimensions are 104 metres in length, with a great diameter of 13.50 metres, and a capacity of 11,000 cubic metres or thereabouts. The two 180 h.p. six-cylinder Chenu motors drive two propellers and a mean speed of 65 to 70 kilometres per hour is said to be easily accomplished.—B.

Germany.

Lieutenant Bier, the erstwhile Austrian army pilot, who flew the Etrich monoplane in the "Circuit of Britain," is now technical director of the aeroplane works at Leipsic, and arrived in Berlin recently with a "Mars" monoplane destined for the army.

It is not often that the powers that be deem it necessary to withdraw a licence, but this has happened in the case of Otto Schaefer, who has been suspended for transgressing against the regulations of the German Aeronautical Society's laws (aviation department). Schaefer took out his brevet in February, 1912, on a Grade monoplane. He will be allowed to apply for a licence after July 31, 1913.—B.

Austria.

General sympathy is felt on the Continent at the news of the illness of Herr Kress, the father of Austrian aviation. The veteran pioneer, who is now in his 77th year, is suffering from the after-effects of a stroke and is paralysed on his right side, whilst speech, too, is affected. Although a slight improvement is noticeable, yet Herr Kress' advanced age gives rise to anxiety. It may be remembered that a few months ago the Austrian Government granted the inventor an annuity sufficient to ward off all financial fears, and this sum was augmented further from his private purse by the Austrian Emperor in recognition of Herr Kress' services to Austrian aviation.—B.

The Coventry Biplane Reappears.

The Coventry Ordnance biplane with the 100-h.p. engine which competed in the Military Aeroplane Competition has now returned to Brooklands with a new set of wings. The span is now about 54 ft., and the chord is 6 ft. 6 in. The camber of the wings is practically the same as those of the Blériot, and instead of warping, balanced ailerons have been fitted to the upper plane. These ailerons are of the later Voisin type in which the chord of the aileron is greater at the extreme tip than at the inner edge, where it decreases till it coincides with the trailing edge on the plane itself. In order to accommodate the bigger span of the machine, the chassis has been raised a foot or more.

Our Up-to-Date Press.

One of our up-to-date photographic agencies has recently been circulating a photograph of a German named Richter making a frantic attempt to glide down what is evidently a very steep hill. The note circulated with this photograph states that "it is the first time that anybody succeeded to get up in the air without wind on a motorless aeroplane." When one thinks of Lilienthal nearly 21 years ago, and Pilcher about seven years ago, and Gordon England and Leake on the Weiss glider three or four years ago, one does not wonder at the inaccuracies of the British Press. True, most of the glides done by these pioneers were done against the wind, but many of their experiments were made when there was no wind at all.

Another Aerial League Dance.

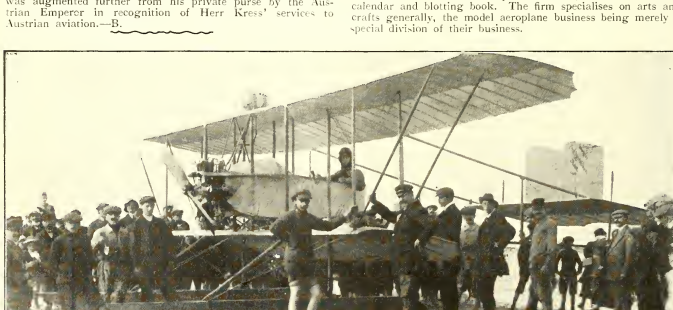
The first of a series of dances organised by Mr. Mortimer Griffin, of Southampton, in aid of the National Aviation Fund of the Aerial League, took place on Tuesday, December 17th, at the Shirley Assembly Rooms, Southampton. There were between seventy and eighty people present, and the dance was a great success. The next Southampton dance in aid of the Fund will take place on Thursday, January 16th.

Up-to-Date Reading.

London Opinion has long been one of the most entertaining publications among modern light periodical literature. It is always thoroughly topical and up-to-date, and about the best proof of its up-to-dateness is the fact that it is among the very few papers that regularly pay attention to aviation, its sporting notes, under the heading of "Round the Town," always containing gossip about flying and fliers, which show the writer to be considerably more on the inside of things than is the ordinary non-technical journalist.

Makers of Models.

From the Model Aeroplane Department of Messrs. W. Leighton and Co., of 10, Broadway, Broadstairs, comes a handsome calendar and blotting book. The firm specialises on arts and crafts generally, the model aeroplane business being merely a special division of their business.



Another view of the 60-h.p. Anzani-Caudron hydro-aeroplane which has done so well during the past year.

The Week's Work.

FRIDAY, December 20th.

Hendon.—AT AIRCRAFT CO., M. Verrier started for Eastchurch on Maurice Farman, carrying Mr. Clement Greswell as passenger, but was forced to return owing to fog and smoke. [A reader at Muswell Hill reports much cross-town flying over Hornsey, etc., during this flight.— ED.]

SATURDAY, December 21st.

R.F.C., Farnborough.—North-easterly wind, very cloudy, slight rain at intervals. On Bréguet 211 Lieut. Playfair 10 mins., had to descend owing to gauge-glass breaking. On Bréguet 213, Major Raleigh 5 mins., with Mechanic Vaisey two flights of 5 and 10 mins.; then taking the following officers up for instruction: Capt. Musgrave 5 mins., Capt. Beor 6 mins., and Lieut. Chinnery 5 mins. On "B.E. Type," Lieut. Lawrence made fine flight of 10 mins., and when landing broke carburetor control. On "B.E. Type" 201, Major Burke 10 mins., and with Capt. FitzGerald 12 mins. Mr. Cody out giving instruction to Lieut. Harrison on Cody biplane taken over by Government. On Maurice Farman 213, Lieut. Herbert 6 mins., Capt. Pigot 9 mins.; then Lieut. Herbert with Capt. Musgrave flew over Hornchurch and back, time taken 1 hr. 43 mins. Good flight in bumpy wind, also having to fly in clouds greater part of time. Capt. Dawes with Lieut. Wadham arrived from Lark Hill on Maurice Farman 216, time 60 mins. Later Lieut. Wadham took over machine and left for Staines, flying well. Capt. Dawes left for Lark Hill on Maurice Farman 214. Major Moss on 266, new machine just delivered, started for Lark Hill, but when passing over Odiham engine kept stopping, so returned to aerodrome. Mr. de Havilland on "B.E. 2" out all morning making long flights with passengers.

Hendon.—AT AIRCRAFT CO., M. Verrier flying all afternoon continuously, carrying numerous passengers.

AT W. H. EWEN SCHOOL, work commenced 8.30 a.m. under Mr. L. W. F. Turner and M. Baumann. Mr. Turner had out 25-h.p. Caudron, and after test handed over to Mr. L. Russell, who made several circuits, handling machine in confident manner, finishing with a glide from 60 feet. Mr Warren also made good straights on same. Pupils under M. Baumann making excellent progress. Lieut. M. W. Noel good straights at 30 feet on 28-h.p. Caudron biplane.

Messrs. R. S. McGregor, E. T. Fesser, and M. Zubizan all doing straights on mono No 1. M. Baumann put up splendid exhibition flight on 35-h.p. Caudron, flying circuits and finishing with glide from 300 feet. During afternoon Mr. L. W. F. Turner gave fine exhibition on 60-h.p. Caudron in rising wind, finishing with a spiral glide from 1,500 feet.

AT GRAHAME-WHITE SCHOOL.—Fine exhibition flying by Messrs. Manton, Noel, and Desoutter, giving courageous visitors an excellent show.

AT BLACKBURN SCHOOL, trial by Mr. H. Blackburn. Then Mr. Busson commencing circuits. Mr. Glew also circuits. Lieut. Messrs. Buss and Glew both flew round aerodrome for 12 mins. each, quite at home on machine. Very creditable performance for first departure from straights. Mr. Morris 20 mins. practising rudder work on ground.

Brooklands.—Mr. Eric Pashley on Sommer biplane, circuits.

AT DUCROCQ SCHOOL, in morning, Mr. MacAndrew figures of eight and landing on mark in fine style. Mr. Jack Alcock across country with Mr. MacAndrew as passenger, circling Byfleet, Weybridge, and Walton, also banked turns and figures of eight with passenger. Mr. Jack Alcock out in evening with new pupil.

SUNDAY, December 22nd.

Hendon.—AT DEPERDUSSIN SCHOOL, Lieut. Porte, R.N., took out 100-h.p. Anzani with passenger, and when over clump of trees adjoining the aerodrome engine gave out suddenly and the machine began to drop, but by excellent handling he just managed to clear obstruction and alight safely within aerodrome. Subsequent examination of engine, which was practically ruined, showed that a hardened steel nut had been put into one of the cylinders. This affair, following on one or two other suspicious incidents, led to belief that machine had been deliberately tampered with, and occurrences have been reported to Royal Aero Club.

AT W. H. EWEN SCHOOL, wind too high for pupils. Mr. Turner made fine exhibition on the 60-h.p. Caudron.

AT GRAHAME-WHITE SCHOOL, fine flying by Messrs. Manton, Noel, and Desoutter, all flying excellently in very nasty wind.

Brooklands.—AT FLANDERS SCHOOL, "Trials" biplane fitted with a 40-h.p. A.B.C. engine (which was delivered at noon on 21st inst.) out for trial flights. Mr. Raynham pilot-



A Reminiscence.—M. Verrier, after one of his fine flights at Hendon, receives the blessing of Signor Nardini.

ing. Behaved admirably, and after a few straights, Raynham took Mr. Flanders up as passenger for straight. Quite a success with 40-h.p. Makers wish they had had 100-h.p at the Military Trials.

Mr. Eric Pashley out on Sommer late in morning found air rather disturbed. Also up in afternoon, and second in competition.

AT DUCROCQ SCHOOL, Mr. Jack Alcock out in morning over Byfleet, and in afternoon in spite of wind for ¾ of an hour. Had stoppage in petrol pipe while flying in competition.

MONDAY, December 23rd.

R.F.C. (Farnborough).—South-westerly wind, about 20 to 30 m.p.h., cloudy, very bumpy up top. On Maurice Farman 266, Major Moss three flights of 10 mins., 20 mins., and 7 mins., intending to fly to Lark Hill, but could not get engine to run satisfactorily. On Bréguet 210, Major Raleigh fine flight of 13 mins. On Bréguet 213, Major Raleigh starting when machine spun round and collided with shed, damaging planes. About 1.45 p.m. M. Verrier and passenger arrived from Hendon in 'rig wind on new Maurice Farman.

R.A.F. (Farnborough).—Mr. Raynham put Flanders monoplane F.4 No. 3 through rolling and climbing tests. Machine inspected and accepted.

Hendon.—AT AIRCRAFT CO., M. Pierre Verrier with Lieut. Mapplebeck as passenger, left at 12.40 p.m. for Farnborough in strong wind, arriving at 12.10 p.m.

Salisbury Plain (BRISTOL SCHOOL).—M. Jullerot out for tests.

TUESDAY, December 24th.

R.F.C. (Farnborough).—No flying, very dull morning, rain at intervals all day. Mechanics busy in hangars greasing machines down for holidays.

Hendon.—AT AIRCRAFT CO., fine flight to test new Maurice Farman made by M. Verrier, at 12.30 p.m., wind showing 35 m.p.h. on anemometer. He made several circuits, and then planed down in the usual brilliant manner.

Brooklands.—AT FLANDERS SCHOOL, Mr. Raynham on biplane at daybreak. After straight, did circuits, and then took Mr. Duklnfield Jones as passenger. Performance so good that he took a mechanic in addition, and with three up machine climbed quite 60 ft. in the straight. Engine not

tuned up yet, so should eventually put up quite a good show.

At Martin-Handasyde's, Mr. Petre started at 9.15 a.m. on the flight to Edinburgh which ended fatally at Marske.

Salisbury Plain (Bristol School).—M. Jullerot for trial, but stopped owing to strong wind.

Wednesday, December 25th.

Hendon.—At Blackburn School, Dr. Christie at 8 to 9.30 a.m. practising straights and landings on own machine, finishing with circuit of aerodrome and stopped by wind.

Friday, December 27th.

Hendon.—At Deperdussin School. Weather calm, but misty. Mr. Brereton took out brevet machine No. 3 for test, and then handed over to Mr. Valazzi, who put in very good straights. Mr. Scott also out on same, doing straights in good style. Mr. Andrews, returned after long absence, had out Taxi No. 2, which he handled well.

At W. H. Ewen School, Lieut. Bayley several excellent straights on 28-h.p. Caudron, under M. Baumann.

At Blackburn School, Dr. Christie out early with own machine, practising straights and curves for half-hour, after which commenced circuits, but, taking too wide a curve to get round inside boundary, he landed hurriedly, breaking some wood. Dr. Christie has made great progress, considering his rare opportunities, and handles his machine in very capable manner.

Brooklands.—At Ducrocq School, Mr. Maurice Ducrocq out at 1.30 to test new altimeter in gusty wind. Heavy rain stopped further flying.

At Percival School, Mr. Humphrey out on Percival-Caudron biplane.

Salisbury Plain (Bristol School).—M. Jullerot for couple of tests.

Sunday, December 29th.

Hendon.—Despite half a gale, and gusty at that, Messrs. Noel and Desoutter came out and gave numerous visitors a magnificent exhibition of wind fighting, but performance rather too dangerous to be comforting to those who knew what it meant.

Brooklands.—At Flanders School, Mr. Rayham out on biplane about 10.30, only doing straights as engine missing still and wind decidedly nasty. Out again at noon doing straights, engine still missing. Finished with an "aterrissage brusque" owing to engine control failing when he was low down over river. Landed on top of iron fence near finishing straight and turned over. Rayham unhurt, but plane and propeller somewhat the worse for wear. Otherwise no damage; all the centre section, including centre planes, landing chassis, engine, and fuselage, intact.

Salisbury Plain.—At Bristol School, Mr. Harrison out early, giving numerous trips to Lieut. Bowhill and Vernon.

Past Week-Ends at Hendon.

Despite the appalling weather through the Christmas holidays, the Hendon aviators kept up their wonderful reputation for consistent flying by turning out during the week-end before and after Christmas. On both the Saturday and Sunday before the holidays, Messrs. Noel, Desoutter, Pickles, Manton, and Turner were all out during the afternoons, Mr. Noel taking up two passengers at a time, and last Sunday, though it was blowing a gale, Messrs. Noel and Desoutter flew excellently. Mr. Noel, on the 80-h.p. Farman, had quite a nasty experience over the south end of the aerodrome, getting a gust under his right wing which threw the machine over to the left and held it there for several seconds before he was able, by diving and turning sharply to the right to come back to an even keel. Mr. Desoutter, on the old 50-h.p. Blériot, went up to about 3,000 feet, at which height he remained quite stationary, head to wind, and it was only by coming down steeply with the engine full on that he was able to get back into the aerodrome. It is really very unwise of him to fly this old machine in such strong winds, for good as she is, and carefully as she is kept in order by the Grahame-White works, the material in her must be deteriorating with constant use. He is much too good a flier to risk his neck in exhibition flights, and his reputation for skill and courage are now sufficient to allow him to be cautious without fear of being thought lacking in nerve.

As soon as some settled weather arrives there should be quite a number of good new machines out at Hendon, the Deperdussin, Bréguet, and others all having novelties on the stocks. The Paris Show Maurice Farman should soon be out, but the Aircraft Company have been so busy on War Office orders that there has been no time to assemble it. There will probably be some new Caudrons arriving before long, and the latest Grahame-White biplane is very nearly ready, so things will be lively between now and the Aero Show in February.

The Winter Season at Hendon.

In response to numerous requests, the London Aerodrome authorities have decided to continue the special flying exhibition, or "flying matinées," held every Thursday afternoon, throughout the winter season. In addition to this, flights are given and passengers are carried every day (weather permitting). Special exhibition flights, speed and altitude tests will take place each Saturday and Sunday afternoon, from 2.30 p.m. until dusk.

The Vickers Training System.

The great firm of Vickers, Ltd., who have until recently confined their activities largely to turning out experimental machines, are now reaping the first fruits of the excellent management of their school started not very long ago at Brooklands. The last batch of pilots' certificates used by the Royal Aero Club includes no less than three on the Vickers monoplane, namely those of Capt. Stott and Lieuts. Corballis and Pollok, all of whom have been trained on the sound Vickers principle of starting them quietly on a slow biplane, then promoting them to a slow monoplane, and afterwards putting them on to the faster monoplane which is used for certificate flying, with the result that the school is not merely turning out pupils who take their certificates after being able to stagger round an aerodrome in a calm on a slow biplane, but is really giving us trained pilots who are "airmen" in the proper sense of the word.

The First Report of the Brighton-Shoreham Club.

The first yearly report of the Brighton-Shoreham Aero Club has just come to hand, and shows that the club is in quite a sound position, although it has not been able to carry out a very striking programme during the year. As the secretary, Mr. H. Gonne, points out, many first-class aviators visited the ground during the year, but their visits were made singly, and it was found impossible to arrange anything in the nature of a competition. One can agree cordially with Mr. Gonne in his statement that the real reason for the slow progress of aviation in this country has been the almost complete absence of public support, in comparison with what has taken place in Germany, France, and Italy. The location of the Avro Flying School at Shoreham should undoubtedly make things interesting next year, and further activity may be prophesied, owing to the fact that Shoreham will be a port of call not only for naval and civilian hydro-aeroplanes journeying along the coast, but for officers of the Military Wing of the Royal Flying Corps, who will almost certainly by then be making squadron tours of the aerodromes, as has been the custom in France for the past year.

Owing to the prevailing apathy, the club has been compelled to hold in abeyance the building of the proposed club-house. They have, however, put up a most comfortable pavilion, and have laid out tennis lawns for the members, and undoubtedly the club will in due time be very successful.

The first annual dinner of the club will be held on January 18th next at the Royal York Hotel, Brighton, when the first president of the club, the Right Hon. Viscount Curzon, will be the guest of the evening, and his presence will be sure to bring a large and appreciative company together.

Birmingham Aero Club.

The Secretary of the Birmingham Aero Club, Mr. Haddon Wood, 8, Frederick Road, Edgbaston, writes:—

"Arrangements have now been completed with Mr. Gustave Hamel to give exhibition flights on the club's aerodrome at Billesley Farm, Yardley Wood Road, Kings Heath, on Saturday, January 11. The exhibition will start at about 2.30. Admission 6d. and 1s. will be charged to the ground, members, of course, having free admission. This is Mr. Hamel's first appearance in Birmingham and those in Birmingham who have not previously seen him will now have the opportunity. The ground is ten minutes' walk from the Alcester Lane's End tram terminus, or can be reached by the Stoney Lane car. It is hoped that this will not be the only exhibition given by Mr. Hamel, and if it is successful Mr. Hamel will be engaged again. The Club is anxious to make itself well known and one of the strongest in the provinces, and as this can only be accomplished with a large membership, and also with the energy of the members, applications for membership are therefore earnestly requested."

Centres of Gravity and Pressure.

Mr. Oscar Gnosspelius, whose experience with hydro-aeroplanes on Windermere is well known, writes:—"I have read with great interest your editorial on 'Centres of Gravity and Pressure in Hydro-Aeroplanes.' The first thing that I notice is that you state that the centres of gravity in the Donnet-Lévêque and Curtiss machines are very low. Personally, I am not certain that this is the case. In the former machine certainly the engine and fuel-tank are placed very high, close under the top plane, so that, without definite figures and weights, in my opinion the centre of gravity of the machine must come above the lower plane, which is not so excessively low. In the Curtiss machine the engine and radiators are also placed high, nearer the top than the bottom plane. I am unaware of the position of the fuel-tank on this machine, but the engine, being water-cooled, is certainly heavier than the Donnet-Lévêque's Gnome, so that also in this machine it is probable that the centre of gravity comes above the lower plane.

"Of the new Voisin and Farman machines I can say little, as certainly in them the centre of gravity must be below the level of the bottom plane, and I should think detrimental to their handiness as flying machines. The whole question of the height of centre of gravity in a hydro-aeroplane is a very difficult one, and must be always, in my opinion, a compromise. Undoubtedly, considering the machine as a boat—i.e., hydrostatically, at rest and at low speeds on the water—the lower the centre of gravity can be placed the better is the stability, both laterally and fore and aft. At high speed the support is partly hydrodynamic and partly aerodynamic, hence the conditions of balance change and usually improve.

"The point on which I should like information is how low can one safely place the centre of gravity without seriously affecting the flying capacities of the machine, remembering that over water, air conditions are probably better than over land?

"I might mention that another factor which has an influence on height of centre of gravity is propeller diameter, as I think it is generally accepted that probably the best flying machine is that in which the line of propeller thrust passes through the centre of gravity. This would appear to be a point against low centres of gravity."

The First Coloured Supplement.

With the issue of THE AEROPLANE published on January 16th there will be presented the first coloured supplement ever presented with an aviation paper. The picture is from a painting by Cyrus Cuneo, one of Whistler's most successful pupils, an artist who has the ability to impart life and action to his work in an unusual degree. The subject is an aeroplane with a passenger flying over the Aerodrome, and seen from above, the sheds and the crowd being apparently five hundred feet or so below. Mr. Cuneo has caught exactly the spirit of flying and has produced what is probably the best flying picture yet painted. The plate will be produced on art paper, suitable for framing, and as the demand for it is sure to be very great it will be well to order copies of THE AEROPLANE in good time, as no further copies will be obtainable when once the supply is exhausted.

Aviation in Scotland.

A valued Scottish correspondent, Mr. G. T. Cooper, writes: "Perhaps you might care to know how aviation thrives up here, and it can be summed up by saying it does not. Scotland, which is supposed to be the home of invention, has not at present got a single aeroplane in flying order.

"Mr. Wilson has put his Caudron up for the winter, since his shed was blown down in an eighty-mile gale, although funnily enough the machine itself was hardly injured at all.

"Mr. Gibson, of Leith, has built a large tractor, and I am myself building a hydro-aeroplane. I am fitting it with a lateral stability device which is most simple and has met the approval of A. V. Roe and Company and several other aeronautical engineers. It is fitted with a 50-h.p. engine, as I hope to produce a simple and efficient machine costing, if put on the market, only about £250.

"At the University here there is a class in aeronautics. Eight attend, and of these I have four with me, in order that they may have a little practical experience.

A New Company.

The W. H. Ewen Aviation Company, Ltd. (Regd. Office: 28, Bath Street, Glasgow; nominal capital, £15,000) has been formed to take over and carry on the W. H. Ewen School of Flying at Hendon and Lanark, and to further and develop aviation in Scotland. The secretary is Mr. John R. Renwick.

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First Aid in Aviation.—I.

The following articles have been specially written for The Aeroplane by an experienced doctor connected with the firm of Burroughs Wellcome and Co., of "Tabloid" fame. This gentleman has studied the needs of aviators, and the information he gives will, if followed, prevent many serious mistakes being made.]

Contrary to the popular belief, flying is by no means the most dangerous of outdoor sports.

Polo playing, motoring, and cycling account in the aggregate for far more injuries. As for mountaineering, flying is a feather-bed to it as regards accidents, and does not account for as many fatalities. As Mark Twain long since pointed out, a bed is the most fatal place of all, the majority of people dying in one, sooner or later. So perhaps the simile is hardly fair. But although not statistically culpable, the aeroplane is undoubtedly still attended by a certain amount of risk, and it is, therefore, worth while for the aviator and his friends to give some study to the very useful and practical science known as "first-aid."

A knowledge of first-aid rules, which are composed about equally, be it remarked, of injunctions and prohibitions, is very necessary if one is to do good and not harm to oneself or to a damaged comrade after an injury.

Take but one instance from the more serious class of accidents. An aeroplane, let us suppose, is flying in what appears to be its natural state. Suddenly something goes wrong, there is too sharp a turn while banking, the controls are not operated at precisely the right moment, or what not. The aeroplane falls, and the spectators rush to the spot where a crumpled mass of tangled wire and splintered wood may be all that remains of the machine which a minute before looked so inspiring and so secure. The question arises, what is to be done and what avoided to give the best possible assistance to the aviator? At a glance it will be noted that he has either fallen clear of his machine or is entangled in it. In the latter case the first thing to be done is to free him. If possible, this should be done by lifting or cutting away the wreckage in preference to attempting to lift the man out of it. If the latter method is unavoidable, it must be carried out with extreme care so as to avoid further injury.

The second point to be observed is the condition of the man: is he conscious or unconscious? If he is conscious, he will be able to indicate the seat of pain, wound, or fracture, and this will be a great help to the first-aid worker, who can then proceed to give such assistance as is necessary in accordance with the detailed instructions under the headings of wounds, fractures, bandaging, etc., in the subsequent articles of this series.

If the man be unconscious, concussion of the brain is the probable cause. Concussion or stunning varies with the severity of the blow received, from a slight momentary giddiness to the most complete insensibility. In a well-marked case the eyes are closed, the surface of the body cold and clammy and the muscles relaxed and flaccid. The respirations are slow, shallow and sighing. In bad cases the pupils of the eyes are dilated and do not contract when light is admitted.

Two definite and very simple rules should be remembered in the first-aid treatment of concussion:—

(1) Alcoholic stimulants should not be given save on the instructions of a doctor.

(2) The best position for the patient is flat on his back.

These rules are emphasised because whenever accidents do occur at flying meetings, the first instinct of the sympathising onlooker is usually to offer a spirit flask, while others attempt to lift up the unconscious man into a sitting position. Both these procedures are harmful. The injured man should be allowed to lie flat, unclothing which could impede the breathing, such as a collar or tightly-buttoned coat, being undone. He should be sheltered from sun in summer or cold in winter.

Not only is a knowledge of first-aid necessary for dealing in an intelligent manner with a situation such as that described, but also for the very necessary attention required by the minor accidents which occasionally crop up in an aviator's career. Then, too, there is the question of fitness. The aviator, like the athlete, must be fit as a fiddle, not a slack muscle anywhere, not a joint stiff nor a tendon aching with overwork. His safety depends on his nerve and his nerve depends to some extent on the absence of worry. No man can do his best if his finger is giving him little stabs of pain from an undressed wound, whereas when a wound has been properly cleansed and bandaged, unless the pain is very severe, its existence is promptly forgotten. It is like a problem dealt with, a danger passed, something one may and does automatically dismiss from the mind.

Wounds.

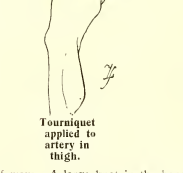
Having mentioned wounds, a word or two may be said first of all about the minor injuries which come under this heading and the methods of dealing with them pending the arrival of medical aid. Even a slight smash may result in quite a nasty wound from a broken strut or wire.

The whole history of aseptic surgery, that history in which Pasteur, Lister and their great disciples have written such splendid chapters during the lifetime of living men, may be summed up in one word—cleanliness. But, then, by cleanliness the surgeon means something more than the absence of lumps of mud. Bacteria, which swarm in dirt and exist in countless numbers in the atmosphere, must be excluded, if possible, from a wound. This can be done by washing it with a swab of absorbent cottonwool soaked in recently-boiled water and covering it up instantly with a piece of aseptic (or germ-free) bandage.

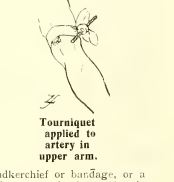
It is obvious that the mere size of a wound is no true guide as to the serious character, or otherwise, of the injury. A long scratch may be far less dangerous than a deep puncture, especially if the latter is situated over any of the vital organs. The colour and amount of blood issuing from a wound should be carefully noted. The blood from a cut artery is of a bright red colour and spurts out in jets, while that from a vein is bluish and dark, and flows more slowly.

Arterial bleeding is the more dangerous, and requires instant attention. A pad of several thicknesses of boric lint should be placed over the bleeding surface and pressed down with a bandage, lifting the limb meanwhile above the body. As we ordinarily know it, boric lint is bulky and awkward to carry, but a variety known as "tabloid" boric lint, which is compressed into a small metal pocket, overcomes all the objections to the ordinary kind. This and a great variety of other compressed dressings are made by Burroughs Wellcome and Co., who have devoted considerable attention to the first-aid requirements of aviators and sportsmen.

If blood continues to flow, a tourniquet should be applied. It may be improvised from a large folded handkerchief, a triangular bandage, or a piece of elastic tubing. A small pad is required to press on the artery above the wound and thus stop the flow of blood. This pad may be made in a variety



Tourniquet applied to artery in thigh.



Tourniquet applied to artery in upper arm.

of ways. A large knot in the handkerchief or bandage, or a piece of cork, or any convenient object, may also be employed.

The hard pad is placed in the exact position on arm or leg as shown in the figures, and secured with the bandage or tubing. A stick, placed in a loop formed by the knotted ends of the bandage, is twisted round to get additional pressure, which should be just sufficient to stop the bleeding. Such a tourniquet bandage has saved many a life. It must not be tightly applied for more than an hour.

When the bleeding is venous, the blood issues more slowly, is of a darker colour and less dangerous. The wound should first be cleansed as directed above. It should be covered with "tabloid" boric lint or gauze, preferably covered with a pad of cottonwool, and held in place with a bandage.

It may be laid down as a sound general rule that first-aid treatment to stop bleeding should always be carried out before attempting to move the patient. This is a very important matter, and we deal with it in our next article.

(To be continued.)

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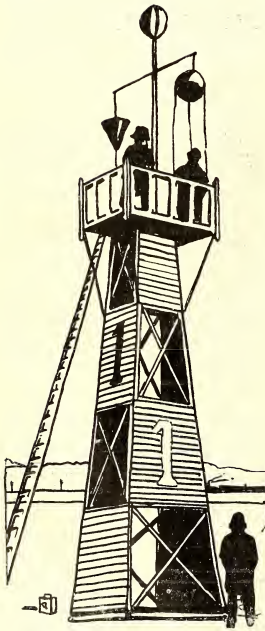
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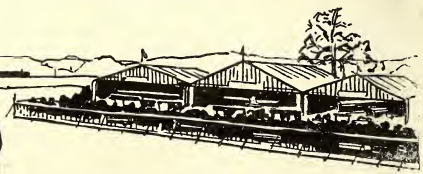


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VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, JANUARY 9, 1913. No. 2.

AUTOAEROPHOTOGRAPHY.



A Photograph taken of himself and M. Mauvais, the pilot, by Señor Alonso, the official photographer of the "Nuevo Mundo," of Madrid. Reproduced by kind permission of Señor Perojo, editor of the "Nuevo Mundo." The three figures on horse-back on the road are King Alfonso and two officers of his staff. The dust above the shield of the machine is that of a squadron of cavalry on the manœuvring ground

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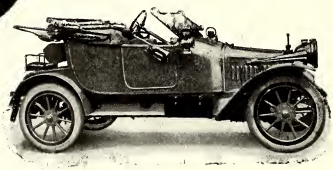
"Saturday was no exception to the rule. The day was a dismal one. Low-lying clouds, a thick mist, and withal a sharp gusty wind in the upper reaches, combined to make the conditions as unfavourable as possible. It was with some surprise, therefore, that we learned, shortly after noon, that the Handley Page monoplane, carrying a passenger in addition to the pilot, had started from Brooklands, where it had been flown the previous week, on its way to Hendon. The journey proved an adventurous one; in spite of the 20-mile wind, the ground was lost from sight in the mist immediately after the start. The monoplane rose to 400 feet, and was thereafter steered by compass. The only landmark seen during the flight was the spire of Harrow Church looming out of the fog. Even from the Welsh Harp, less than a mile away, the aerodrome was invisible, and it was only after circling for some time that the pilot managed to obtain a glimpse of the aerodrome and to effect a landing.

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EDITORIAL AND ADVERTISING OFFICE—166, PICCADILLY. TELEPHONE—5407 MAYFAIR. TELEGRAMS—AILERON, LONDON.

Some Problems of the Royal Flying Corps.

Verily the path of those controlling the destinies of the Royal Flying Corps, whether of the Naval or the Military wing, is not strewn with roses. Troubles within and without beset them, and it speaks well for their earnestness and ability that more serious blunders have not been made so far. Let us hope that during the coming year mistakes will be equally few and far between. In the interests of all concerned it may therefore be well to consider a few of the problems involved in the very complex task of providing this apathetic and undeserving country with proper aerial defence.

Men and Machines.

In the first place it is obvious that men and machines are badly needed, for at present not a single squadron of the corps is capable of being put on a war footing. We have not enough really modern machines to equip more than one squadron; and, despite Colonel Seely's optimism, we have no officers trained to fly those machines. Even if we had the men and machines there is no transport of any kind even for a single squadron. We have not one properly fitted aeroplane transport waggon, or even a trailer designed to carry an aeroplane, and the travelling motor workshop has scarcely been thought of. It is true that many officers of the Regular Service, and civilians accepted on probation for the Reserve, are awaiting their turn to join the Central Flying School, which sounds well when announced in the House of Commons, but they are waiting because there are not enough machines for them at the school, where there are already more aeroplanes in flying order—even though they are slow school machines—than in all the fighting squadrons put together. The reason there are not more machines is apparently that the War Office keeps on delaying ordering, on one pretext or another, presumably owing to the representations of the Treasury that money must not be spent too lavishly. It is, therefore, obvious that pressure must be put on the Treasury to obtain the necessary money.

There is also the possibility that orders may have been withheld because certain machines, such as the copies of the "B.E.2," have been long delayed in delivery, and it was, therefore, thought useless to order other machines from the firms with whom these orders have been placed, or from any other firms. This is quite an erroneous idea, for the "B.E.'s" have been delayed solely because of the insistence by the officials of the Royal Aircraft Factory on the use of certain particular materials, or on certain methods of construction, although those of the firms in question may be just as good. This insistence is to a degree as it should be, for the responsibility for the success or otherwise of these machines will be on the Factory and not on the makers, as it would be if they had a free hand subject only to the Factory design being followed. Nevertheless, the delay over these machines hardly seems an adequate reason for not ordering those of the firms' own designs, provided they pass certain specified tests, and provided the workmanship is approved by competent inspectors. The Admiralty buys its machines on the latter plan and apparently it works excellently.

Prohibited Flying.

So far as the Military Wing is concerned it appears as if the wholly commendable caution of the authorities may lead to trouble in another direction if carried to excess. It is now fairly well known that officers of the Regular Service doing duty with the Flying Corps are prohibited from flying at all while on leave, and when on duty are only permitted to fly if a senior officer is present.

The former order is perhaps due to a fear that some officers desirous of obtaining a name for themselves as pilots might take to what is vulgarly known as "stunt flying" at civilian aerodromes, the assumption being that constructors would willingly lend machines for the purpose, partly because of the public advertisement to be had from the fact that an officer of the Royal Flying Corps had made a good flight on one of their machines, and partly because the said officer would, if he liked the machine, speak well of it to the authorities and so influence orders.

Now, obviously there are serious objections to an officer of the King's Service turning himself into an aerodrome acrobat, though these objections are equally valid in the case of a cavalry officer riding a trick jumper at a horse show, or riding in an open steeplechase for a money prize, or even riding a friend's horse in a private match for a money stake on a public racecourse.

The official view may be either that it is simply bad form for an officer to perform in public, or that "stunt flying" may lead to fatal accidents, or that an officer flying a borrowed machine may be bribed to use his influence in favour of that make of machine. All these objections apply equally well to the cavalry, and unfortunately bribery and corruption have not been entire strangers to the remount department in the past, and there are "ways of doing things" in selling cavalry horses to the Army even to-day. Happily we in this country are considerably more free from corrupt dealing in the King's Services than are the services of any other country, and there is no reason to suppose that mere

contact with aeroplane makers is likely to corrupt a man's morals more than his intercourse with horse-jobbers or racehorse owners.

Also it would appear probable that a man possessing sufficient mental capacity to realise that aviation is worth taking up now on account of its future value to the Services, is quite likely to have sufficient sense to avoid dangerous "stunt" flying, and to have sufficient self-restraint to refrain from over-much obtrusion into the professional, even if self-respecting, acrobat's limelight.

On the other hand it seems logical that if machines of various makes are flown by officers of the Flying Corps and proper reports made thereon, the authorities controlling the Corps are likely to acquire more knowledge as to the capabilities of and the objections to those machines than they will ever obtain by simply watching them perform in the hands of the makers' professional pilots, who know from long experience the tricks of each machine and how to hide its defects, or than they will get from the purely theoretical opinions of the scientists at the Royal Aircraft Factory.

Here again the Navy shows the advantage of the "rule-of-thumb-plus-applied-science" methods on which it is run. No restriction is placed on Naval officers, who fly when and what they like, the net result being that the stock of knowledge obtained vicariously by the administrative staff is very comprehensive, considering the small number of Naval aviators, and the Navy's purchases of machines are made with a lack of red-tape and a catholicity of taste which bids fair to make the Naval Wing of the Royal Flying Corps one of the most efficient even among the highly specialised branches of the Navy.

The Benefit of Publicity.

Apart altogether from the arguments brought to notice above there is another point of view which, I may add, is not that of a civilian. Commenting on the idea that no officer should be allowed to make experimental flights without the permission of the authorities, a friend of mine says: "If this suggestion was acted upon, I think it would be harmful to the Service. Surely the more experience a flying officer obtains the more valuable will his services be to the Army. I really think that officers have quite enough restrictions as it is, and I hardly think it is necessary for civilians to suggest fresh ones. Also don't you think flying wants encouraging? The more flying that is done in England the better for us all." The last sentence strikes to the root of a great truth which our Government will have to face sooner or later.

This is an age of advertisement. In the United States of America, which is, excepting ourselves and China, the only country in the world fool enough to retain a voluntary Army system, the Army and Navy Departments run regular advertisement managers; well paid officials who advertise for recruits with an ingenuity and persistence worthy of Mr. Selfridge himself. Even here we indulge in quaint, old-fashioned posters which we hang outside post offices and police stations, beseeching misguided youths to come and be made food for cordite at a shilling a day, the said posters being occasionally embellished with execrably irritating pictures of tailors' dummies in the uniforms of various corps. We send out military commercial travellers, whom we call recruiting sergeants. And we even go to the length of having a military tournament to advertise to the British tax-payer the fact that we have a real army which can do musical rides and cut off Turks' heads, and beat each other with single-sticks, and climb up canvas fortifications, and drive horse guns through a maze of posts, and do other things distantly suggestive of bloody war.

Now, if we go to all this trouble and expense to gather in yokels and corner-boys, and to show the British shop-keeper in his comfortable seat at the Tournament what the Service makes of them, why is it not equally business-like and dignified to let our flying officers visit public aerodromes and show the more intelligent citizens who go, often in acute personal discomfort, to those nurseries of progress that even a soldier can fly quite well? Surely the more interest the public take in military aviation the easier it will be for those responsible for the control of the Flying Corps to obtain the men, money, and machines we so sorely need. Admittedly, flying at civilian aerodromes by military aviators advertises the officers who fly, but it also advertises the aeronautical section of the Service, and such an advertisement is badly needed.

Lack of Practice.

Yet another possible trouble arises from an agglomeration of causes, namely, the scarcity of machines, the prohibition against flying on civilians' machines, the order that a superior officer must be present when any flying is done, and the ban on monoplanes. All these conditions combine to make for lack of practice, which is bound to be disastrous if war should break out. In such an event flying officers of great ability who have practically done no flying for months, and newly joined pilots who have not had as much practice as they might have had in the time they have spent with the Flying Corps, will equally be called upon to fly any and every machine available. To quote yet another of my correspondents—one who is intimately connected with the Army and with the Flying Corps: "If there was war here to-morrow those machines on which they are not allowed to practise would be called out, and those brave pilots with so little experience would be ordered to fly them, and fly them they would—to their death. Who *is* responsible for the Flying Corps? The officers of the Corps are the first to feel all this, and the first, alas, to suffer for the gross ignorance of those in power. The accidents to the monoplanes did not occur because they were monoplanes. Why do not those that *know* have a free hand in such matters of life and death?" My correspondent also expressed the opinion that those in power think that because a man can fly he can fly any type at any speed, and on any sort of machine, and, writing of those who have gone, continues: "That others should have to be sacrificed when perhaps they could be saved, is what I feel so strongly. Is there a son or brother of one of the present men in power who is in the Corps? I hardly think so."

Here we have an opinion which, at any rate, deserves careful consideration. If lives are sacrificed which might have been saved, lack of practice will be largely the reason for their loss, and the four causes referred to at the head of this section are



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those responsible for lack of practice. Obviously scarcity of machines entails lack of practice. At present the squadrons at Lark Hill are so short of machines that many officer-aviators belonging to those squadrons have not been on an aeroplane for months, and at Farnborough things are but little better. Two or three officers are told off for each machine, so that one or more are standing idle when they ought to be practising during a short spell of good weather. This system has the added objection that one pilot may damage a machine in a rough landing, so that though no breakage is visible the damaged part may collapse when the next pilot goes up. Each pilot should have his own machine, and no one else should fly it.

Incidentally, in time of war, we shall need several machines for each pilot, for one pilot can break up innumerable aeroplanes, whereas the aeroplane which has put its pilot out of action is not likely to be worth much afterwards. Thus it may be seen that it is little use appointing numerous officers to the Royal Flying Corps until we have sufficient machines to go round, and accommodation for them.

The prohibition against flying civilians' machines still further decreases opportunities for practice, especially at present when the few military machines are given over entirely to newly-joined officers who have only just left civilian schools, and who, although officially "trained military aviators," are actually under instruction by the seniors of their own squadrons. Several of these officers have never passed the Central Flying School, and the work they ought to be doing there is being done, not on school machines, but on what are ostensibly fighting or scouting machines at Farnborough, whereas these machines should actually be used only for the higher education of the trained pilots of the fighting squadrons. The result of this system is seen in the breaking up of a £1,200 tractor biplane by a pupil who had only just taken his certificate on a box kite, and by the fact that several of the best fliers of the Corps have not flown for so long that they are actually becoming afraid of forgetting how to fly.

The presence of a senior officer when juniors wish to fly is certainly desirable, but it has the evil effect that the amount of practice done depends more on the state of the senior's liver or nerves than on the weather. As a result one may often see at Farnborough, for example, the Factory pilots or civilian pilots, who are there to put new machines through their reception tests, flying gaily when no soldiers are allowed out. True, the weather may not be suitable for the preliminary gyration of ex-box-kite fliers, but if it is good enough for civilians on machines of doubtful reliability (they are obviously under suspicion till they have passed their tests) it should be good enough for the more experienced military pilots on machines which have been officially tested and passed, and it seems highly probable that the pilots themselves are better judges of the safety of flying certain machines in certain weather than is any senior officer, whose administrative duties prevent him from acquiring practical experience of either the pilots' individual ability, the capabilities of the machines, or the effects of various types of weather in the locality.

The ban on monoplanes has decreased the number of machines available for practice, but it has had worse effects than that. We have stored up a number of machines which will presumably, after certain alterations have been made, be put into the hands of the Flying Corps, in a bunch. There will be a rush to fly them, and, as they are nearly all faster than the biplanes now in use, there will probably be a fresh crop of monoplane accidents, which will be blamed on the monoplane as such, and not upon bottled-up enthusiasm plus lack of practice. If these monoplanes had been put into use as they were delivered, and inspected carefully after every flight, we should know a good deal more than we do now, and we should have many more pilots with experience of flying and landing really fast machines.

The effect of blaming the monoplanes has also reacted adversely on the firms who built them, for owing to these machines standing idle there has been no opportunity of finding out whether the military pilots want more of them, and consequently no fresh tenders have been invited from the firms who built them. Thus we find makers who are able to do good work, and who have delivered their goods, standing idle till an easy-going committee thinks it worth while to issue its report. It never seems to have struck the authorities that these same firms would be glad of orders for biplanes.

Worse still, the delay is likely to continue, because there is apparently a fierce argument in progress as to whether the alterations advised by the "Monoplane Commission" shall be done by the Royal Aircraft Factory, or by the makers of the machines, and whether they shall be paid for by the Factory (because their tests suggested the alterations), by the makers (because the alterations are supposedly necessary), or by the Royal Flying Corps (because they own the machines). Meantime, while this interesting academic argument of the order of "which came first, the hen or the egg?" is in progress, aeroplane workmen of experience are leaving the industry for want of employment. And when the big rush of orders comes, as it will if war breaks out, we shall rake in all kinds of tinkers and cabinet-makers, and kill our military pilots wholesale because our authorities have not either sufficient sense or sufficient will-power to do things on an adequate scale here and now.

We need military pilots in case of war, we need machines to mount them. The pilots need training, and the machines have to be built. The training depends on an adequate supply of machines. The supply of machines depends on the training of experienced workmen. The training of the workmen, like the training of the pilots, depends on the ordering of a sufficiency of machines. And the ordering of sufficient machines depends on the amount of worrying the Treasury, the Army Contracts Department, and the Master General of the Ordnance receive from the officers controlling the Royal Flying Corps, and the outside support they receive from the happily increasing number of Members of Parliament who take an interest in aerial defence, and who stir up the Secretary of State for War with awkward questions, so that he in turn may worry the permanent staff at the War Office. Continual worrying is the only cure method of moving an English official.

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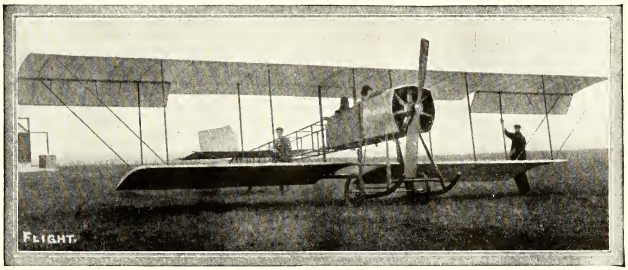
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The Navy and the Royal Flying Corps.

BY W. E. de B. WHITTAKER.

An ever-present difficulty confronting those in whose hands lie the organisation of the Army and Navy is that of *personnel*. The voluntary system of enlistment has many predominant virtues, but it is inadequate. The cry of "Freedom" and "Liberty" has led to many abuses, not the least of which is the growth of a strong disinclination to perform the proper duties of a citizen in an efficient State. "Freedom" to the demagogue implies an almost total lack of restraint, both personal and public. The laws of the State produced under depressing conditions of theoretic liberty ordain that citizens shall not be permitted to do certain things, but it is rare to find a case of legal insistence on the performance of certain duties to the State other than those of paying taxes and registering the incoming of new citizens. Save in the upper classes—and then not to a universal extent—none consider it a duty to serve the State. Men become soldiers or sailors because the life attracts them, and not as a result of a course of ethics. Financially, the individual has little to gain in either of the fighting Services. It is therefore extraordinary that the supply is as high as it is at present.

So far as the commissioned ranks are concerned, the most useful body of men—the sons of country gentry and of professional men—is handicapped by the expenses connected with the King's Services. Without private means it is practically impossible to exist in the Army, and the same conditions apply in the Navy so far as the lower commissioned ranks are concerned.

The Services differ in another way. The preliminary training of an Army officer does not entail very great expense. With the greater number it is not necessary to specialise. The average soldier acquires most of his knowledge in the course of actual experience. On the other hand, the scientific training of naval officers is much more extensive, and specialisation has reached a high level. Therefore, unless the life attracts or the individual has private means, the average man prefers to follow some profession where his training will receive a more adequate reward than is possible in the Navy.

As a result, the Navy is at the present moment several hundreds of officers below establishment, and the supply shows no signs of increase. There are too few men to carry out the ordinary work of the Navy without touching any of the specialised services of great importance to the sea Service.

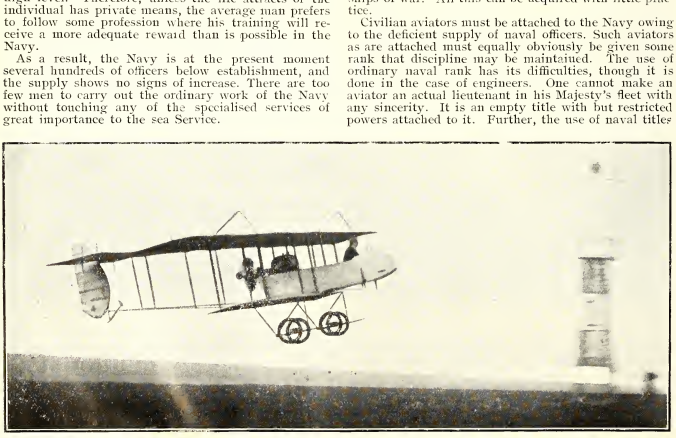
The coming of aviation has brought with it a series of problems for the naval and military authorities. After much delay, a scheme was arranged the broad principles of which were announced by the Under Secretary of State for War in a lengthy statement preceding the debate on the Army Estimates for 1912. He recognised the fact that it would be necessary to enlist civilian aviators if the corps was to reach the numbers desired. Speaking, in a sense, for the Navy as well as for the Army, such details relating to *personnel* as he gave could apply only to military conditions. To other people he left the solution of certain grave problems.

The principal national duty of the aeroplane is at present for purposes of reconnaissance, the broad principles of which are alike in either Service. Those flying for the Army and those for the Navy will not differ greatly as to their knowledge. The latter class will have the simpler work.

The employment of civilian aviators on Army work is comparatively simple. They can, if of suitable social position, be given the rank of second-lieutenant, and after a period of training in a line regiment they will be sufficiently conversant with the ordinary routine of military life to be of some use as junior regimental officers, as well as aviators. There is no need for them to specialise in any military subject. As soon as they understand the meaning of discipline and a knowledge of infantry training they are of use as soldiers.

The Navy has peculiar difficulties with which to contend. Each naval officer undergoes a course of elaborate training in navigation and kindred sciences, a deep knowledge of which is quite unnecessary to the aviator. None of the flying corps need be capable of navigating a ship of war or of taking a submarine through a series of devious evolutions. They must understand fleet formations and the different types of ships of war. All this can be acquired with little practice.

Civilian aviators must be attached to the Navy owing to the deficient supply of naval officers. Such aviators as are attached must equally obviously be given some rank that discipline may be maintained. The use of ordinary naval rank has its difficulties, though it is done in the case of engineers. One cannot make an aviator an actual lieutenant in his Majesty's fleet with any sincerity. It is an empty title with but restricted powers attached to it. Further, the use of naval titles



Mr. Louis Noel on the 80-h.p. Henry Farman flying in the Hendon Exhibition Flights on Thursday last.

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complicates matters of precedence in intercourse between aviator-officers of the two Services.

There is, among others, one obvious solution of the difficulty in the future. For a space of time stretching over two centuries there has been under the control of the heads of the Admiralty a highly efficient body of men known as "The Marine Forces." At present, it includes the Royal Marine Light Infantry and the Royal Marine Artillery, and is about 20,000 in number. First formed in 1664, with drastic alterations in 1684 and 1689, the corps was for many years the trained fighting force of the Royal Navy. At the same time, it placed a repressive influence on the unruly seamen, collected, as they were, from all sources, including convict prisons and "Alsatia." But for the Marines, the few serious mutinies which mar the history of the sea Service would have been more serious still. Even by soldiers their efficiency is recognised and admired.

Why should not all civilians entering the naval wing of the Royal Flying Corps be gazetted to the Royal Marines as second lieutenants? Such a move would probably have no popularity in the amphibious regiment, but much personal pleasure has to be sacrificed in the interests of efficiency.

After the customary flying training, each officer-aviator (on probation) could be attached to a marine depôt for six months, during which time he could acquire a working knowledge of Service life. A cruise as a marine officer could do no harm and might be of value. After the lapse of this period of probation, if his conduct was satisfactory and his rate of progression sufficiently rapid, he could then be gazetted to the Naval Wing. Possibly from year to year it would be found advisable to attach him to a marine unit at annual intervals for a "refresher" course.

At the end of the four years tentatively fixed as the period of service, such officers as are still efficient aviators should remain on the establishment, whilst others whose nerve has failed or who are otherwise unsatisfactory might return to private life with a gratuity varying in amount according to the value of their services.

Naval and Military Aeronautics.

GREAT BRITAIN.

The following appointments were announced at the Admiralty on December 31st, 1912:—

Lieutenants—H. D. Vernon, R. P. Ross, J. R. B. Kennedy, and D. A. Oliver, to the "President," additional, for aviation course at Central Flying School, to date January 17th.

Royal Naval Reserve.—Lieutenant F. W. Bowhill, to the the "President," additional, for aviation course at Central Flying School, to date January 17th. Sub-Lieutenant A. W. Bigsworth, to the "President," additional, for aviation course at Central Flying School, to date January 17th.

Royal Marines.—Lieutenant C. E. H. Rathborne, to the "President," additional, for aviation course at Central Flying School, to date January 17th.

Royal Naval Volunteer Reserve.—Sub-Lieutenants R. L. G. Marix and H. A. Littleton to the "President," additional, for aviation course at Central Flying School, to date January 17th.

Admiralty Appointments, January 6th: Lieut. P. A. Shepherd, R.N., to the "Actæon," additional, as flying officer, to date December 5th.

Capt. C. E. Risk, R.M.L.I., to the "Actæon," additional, as flying officer, to date, December 5th.

Lieuts. I. T. Courtney, R.M.L.I., and G. V. Wildman-Lushington, R.M.A., to the "Actæon," additional, as flying officers, to date, December 5th.

The Naval Aviation School at Eastchurch reopened on January 3rd, on the expiration of four weeks' general leave. Three officers, Lieutenant J. T. Babington (of the "Sandfly"), Lieutenant T. A. Cresswell (of the battleship "Orion"), and Assistant-Paymaster E. M. Parker (of the "President"), will join the school for an aviation course, to qualify them for admission to the Royal Flying Corps.

From the "London Gazette," War Office, January 3rd:—

Regular Forces, Royal Flying Corps.—Military Wing.—Second Lieutenant Geoffrey de Havilland, Special Reserve, is appointed to the Reserve. January 4th, 1913.

Special Reserve of Officers. Royal Flying Corps.—Military Wing—Norman S. Roupell, late Cadet, Brighton College Contingent, Officers Training Corps, to be Second Lieutenant (on probation). January 4th, 1913.

FRANCE.

The Breguet escadrille which was recently to have moved from La Brayelle to Etampes is to remain at the former place until further orders.

Lieutenant-Aviator Cheutin, accompanied by a passenger, flew on a Henry Farman biplane (80-h.p. Gnome) across the desert from Biskra to Touggourt in six hours. The distance is over 200 kilometres, and the flight was one of high excellence. Lieutenant-Aviator Reimbert, who started (also with a passenger) on the same journey, was forced, owing to a burst oil tank, to land at M'raier. After making a hurried repair, the flight was continued, only to end finally at Djamaa owing to a seized cylinder. The Algerian escadrille bids fair to rival that of Morocco for activity.

On December 31st Lieutenant-Aviators Garnier (commanding) and Koeckel and Sapper Pacquet, left Chateaufort for Epinal on Borel monoplanes. This escadrille of Borel monoplanes is to be permanently stationed at Epinal, thus strengthening the aerial concentration at the frontier. Lieutenant-Aviators Grezeaux, Battini and Coville and Quartermaster Quennehen, all with Maurice Farman biplanes, are also stationed at Epinal.

The Ministry of War has undertaken to accept two aeroplanes (two-seaters) from a committee of the citizens of Le Havre. They are to bear the names of "Ville du Havre" and "Pays de Caux."

On the last day of the old year two Maurice Farman biplanes, stationed at Epinal, landed at one o'clock near Remiremont. One of the two was piloted by Lieutenant-Aviator Coville, with Enseigne de Vaisseau Berode as passenger. M. Berode, when the signal to restart was given, started the motor by the old method of swinging the propellor. As the engine started he slipped forwards, and was struck on the back of the head by the propellor. He was conveyed in a serious condition to the hospital at Remiremont, where he died the following morning.

M. Bregi, the well-known Breguet pilot, passed the necessary tests for his military brevet on January 1st.

In the list of decorations issued at the end of the year the names of several distinguished officer aviators appear. Among others who have been appointed Chevaliers of the Legion of Honour are Féquant, Do-Hu-Vi, Van den-Vaero, and Gaubert.

A military commission accepted at Buc on December 26th a Henry Farman biplane (80-h.p. Gnome), offered to the Army by the Colony of Madagascar.—W.

GERMANY.

The Imperial Aero Club has been occupied for some time now with the formation of a German Aviation Volunteer Corps, modelled on the German Motor Volunteer Corps. The pilots bound themselves to do service with the Army in war and in peace under certain conditions. The statutes of the club have now been worked out by the Imperial Aero Club. The corps will have its headquarters in Berlin, and membership is conditional on bodily health, German nationality, ownership of a brevet, and on the result of a special examination on a machine belonging to the Army. Soldiers on the active list and in the reserves cannot become members of the Volunteer Corps. Candidates further have to enlist in the corps for a period of at least three years, state their readiness to give their services without limit in war time, and attend an annual practice camp in peace of ten days, and also pass an instruction course. The machines will be supplied by contract with the manufacturers, or else the aviators must use their own. Only such machines as are similar to Army types may, however, be used. The War Office pays an annual subvention—three thousand marks are proposed for each aeroplane, and the volunteers receive forty marks for every practice day. This sum covers billeting and food, although the Army officials will endeavour to find billets for the Volunteers so far as possible. The War Office will not incur any responsibility for damages and accidents to Volunteers during manœuvres or trials in times of peace. In war time the

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general military laws and regulations will be extended in every instance to the members of the corps and their families.

A French aeroplane manned by two officer aviators of a Nancy regiment landed on German soil near Avricourt on December 24th. The pilot, Lieutenant Glaize, had lost his bearings, and returned the call Sergeant Cipa, of the German Army, had paid to France a week before.—B.

BELGIUM.

The military aviation corps continues to grow in size. Within the last few weeks several military pilots have taken their certificates on the aerodrome of Saint Job-in-'t-Goer. The brevet machine is a Henry Farman biplane (70-h.p. Gnome).

At Brasschaet, the military aerodrome, a two-wheeled truck designed to carry aeroplanes has just been delivered. Designed by Lieutenant Aviator Nelis, it is capable of being towed behind a motor-car at a speed of thirty miles an hour, bearing an aeroplane and spare parts.

In a month or two the organisation of the Flying Corps will be complete. Six escadrilles are to be formed, each of four fast biplanes, with full road transport. The personnel of each escadrille is as follows:—Eight officer aviators, one sous officier, one corporal, fifteen men and six civilians. One escadrille will be stationed at Liége and one at Namur. The Brasschaet Military School is to have a separate personnel, consisting of four officers, four sous officiers, two corporals, ten men and three civilians.—W.

Range Finding.

I have recently had an interview with an aviator who was present during several of the range-finding experiments made at the Camp de Mailly during the summer of 1912. He was greatly impressed by the degree of accuracy attained by the aviator range-finders.

A battery of artillery (field, six guns) took up a position, unlimbered, and prepared to open fire with shrapnel on an object of which the range was unknown. With the battery was an aeroplane wagon, on which was mounted a Blériot monoplane (in most cases). This was unpacked and assembled in twelve minutes, and shortly afterwards an aviator was in the air. When he was midway between the base and the target the battery opened fire. If the first shot was too short the aeroplane dipped slightly, rising if the reverse was the case. A turn to the left or right indicated lateral inaccuracy of range. And in less than ten minutes the battery had the accurate range.

Of all those employed, Lieutenant Aviator de Rose reached the highest stage of efficiency. He could in a very few minutes give the range to his battery.

Something of the same kind is being attempted in this country, but, naturally, no information is available for public use.—W. E. de B. W.

The Retirement of Famous French Constructors.

One is so accustomed to hear in this country of the prosperity of the French aeroplane constructors that it comes as a matter of surprise when well-known manufacturers retire from business owing to lack of orders. To abuse the British Government for lack of initiative and negligence of public interests because insolvent aviation firms are not supported by official action is a common event, but to accuse the French War Office of similar somnolence seems strangely unreal. And yet, owing to lack of official support, both M. Roger Sommer and M. Robert Esnault-Pelterie have announced their irrevocable intention of retiring from business. Many people leave business with full coffers and a tarnished reputation. These two gentlemen leave their names great in the history of aviation, and have left the trade without having made the slightest profit.

Roger Sommer was one of the first pupils of Henry Farman, and as a pilot speedily outstripped his master. He made his first flight in the early part of 1909. In May, though his training was brief and his task heavy, he made flights of half an hour in duration. Shortly afterwards he remained in the air for 2 hours 27 minutes, thus creating a world's duration record. He flew at the historic Reims meeting with characteristic regularity. At Doncaster he was one of the few who made a good showing. Delagrange and Le Blon, both to die so soon after, were his principal opponents.

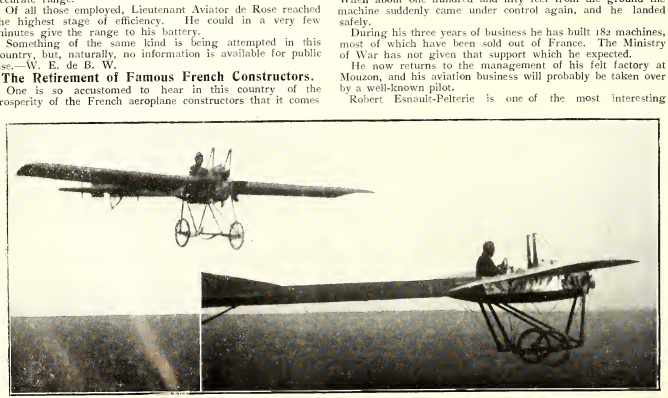
Leaving Farman in the beginning of 1910, he installed himself at Douzy, in the Ardennes, and began to build a series of biplanes on his own account. Resembling the Farman in its main features, it had several points of distinction. On one of them Sommer created records with four, seven, eight and thirteen passengers. Later in the year he designed and built a monoplane, which has exceptional points. The names of the pilots who achieved distinction on Sommer machines speak for the excellence of design. Lieutenants de Caumont and Morel, the latter of whom has flown over 10,000 kilometres across country on a Sommer monoplane; Lieutenant Dahlbeck, of the Swedish Navy, who flew from Copenhagen to Stockholm; Kimmerling, the hero of many cross-country races; Bathiat, no less brilliant within the confines of an aerodrome than in great flights from point to point; Lindpaintner, Aquilla, Frey, Paillette, Tétard, Oliverès, and René Simon are other great pilots part of whose fame remains with Sommer.

M. Sommer himself has not been free from accidents. Last summer whilst passing over Bazeilles his monoplane began to dive. He was unable to control it in any way. Finally, in despair, he let go the controls and waited for the end. When about one hundred and fifty feet from the ground the machine suddenly came under control again, and he landed safely.

During his three years of business he has built 182 machines, most of which have been sold out of France. The Ministry of War has not given that support which he expected.

He now returns to the management of his felt factory at Mouzon, and his aviation business will probably be taken over by a well-known pilot.

Robert Esnault-Pelterie is one of the most interesting



On left, Mr. Brock, Chief Instructor at the Deperdussin School at Henden, on the Brevet Machine. On right, one of the pupils just off on one of the "taxis."

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figures in aviation. Young and wealthy, an engineer of distinction, he have given his time and money during the last four years in the furtherance of that most costly of sciences, aviation. Mere business gains were not his lodestar, though even he could not continue for ever at a dead loss. The scientist who succeeds has a right to expect public support.

Four and a half years ago he designed and built his first monoplane, an aeroplane of quaint aspect, and with an inverted dihedral. In the beginning he piloted his own machines, but later family influence prevailed on his flying. Little success attended his efforts until in 1910 he followed more conventional lines in his designs. The pioneer of all-steel aeroplanes, and one of the few who has designed both engine and machine, he was, perhaps, the first engineer of ability to turn his thoughts to aviation.

His machines have done but little in competitions, owing largely to his dislike of public exhibitions. On December 31st, 1910, at Buc, Pierre Marie Bournique flew on an R.E.P. monoplane 535 kilometres in 6 hrs. 29 mins. 19 1-5secs., beating all records for speed between 250 and 500 kilometers. Gilbert, on an R.E.P. monoplane, alone of all the competitors flew throughout the European Circuit without altering or repairing his machine. The R.E.P. was probably the most efficient of the hydro-monoplanes at the St. Malo meeting.

Now, after years of endeavour and after attaining a high degree of scientific success, he retires from aviation undecorated by the Government and unthanked by the people. One cannot specify the steps of scientific advancement in terms that would be concise and clear. In print it would be overshadowed by some glittering list of brilliant flights made by some aerial acrobat whose nerves have gone and whose wife is peevish.—W. E. de B. W.

More Avro Activity.

The 100-h.p. Avro hydro-aeroplane built to the order of the Admiralty has now been delivered at the Isle of Grain, the new hydro-aeroplane station opposite Sheerness. It is undergoing its tests during this week under the supervision of Lieut. Seddon, R.N., commanding at the Isle of Grain. The floats on this machine have been designed by Mr. Grossspelius, who will be remembered as the first person to fly off water in this country, which he did early in 1911 over Windermere on the monoplane of his own construction.

This new Avro is a particularly well built machine, and should satisfy the most critical inspection. It is eminently satisfactory to note that the good performances of the four Avros delivered to the Central Flying School well up to contract time last year have at last been recognised by further orders, four more machines being on order for the R.F.C.

As was noted recently, A. V. Roe and Co., Ltd., has now been registered as a private limited company, and the public will not have the privilege of coming in. J. Grimble Greves, Esq., J.P., and late M.P., who is the head of the firm of Groves and Witnall, Ltd., has joined the board of A. V. Roe and Co., Ltd., and with him Capt. H. Lutwyche, who has considerable knowledge of active service conditions, having served in the South African war. This strengthening of the board of the firm should have excellent results and altogether the firm's prospects seem particularly good.

The Monoplane Report.

THE AEROPLANE is officially informed that the report of the Committee on Accidents to Monoplanes is at present under consideration by the Army Council, and has not been communicated to anyone. At the same time it is understood that advance copies of the report are in the possession of certain officers of the Royal Flying Corps, and of certain officials of the Royal Aircraft Factory. Meantime the people most interested, namely, the makers of the machines, are patiently awaiting their fate.

From Bulgaria.

The following welcome postcard, written on December 19th, 1912, from Mustapha Pasha, arrived at this office last week:—

"Only five minutes ago I have received your letter dated November 11th. I have not received one single copy of THE AEROPLANE. [They have been sent every week.—Ed.] Your letter has been in Constantinople first, back to England, and finally came here. I have been flying a lot on a Bristol 50 h.p. first, and after on a Blériot 70 h.p. tandem, which I am still flying at present. I have been more than once over this 'mosquée' [Shown on the postcard.—Ed.] from a height of 1,500 and 1,700 metres, quite safe enough from the nasty 'shrapnels.' I shall write to-night a long letter to give you full news.—G. SABELLI."

In another postcard Signor Sabelli says that Mr. Snowden Hedley was then at Chorlu, and was well.

New Deperdussin Hydro-Monoplane.

One day last week the writer had the privilege of inspecting in detail the new hydro-monoplane which is being built by the British Deperdussin Co., Ltd., and, though the machine contains many novelties that it is not permissible to describe in detail till the machine makes its public appearance, it is, at any rate, possible to note the fact that it is one of the finest pieces of aeroplane work ever done in this country. The machine has a single central main float, more or less of Fabre type, and a supplementary float under the tail which is calculated to lift its own weight when in the air. The body is of the "monocoque" type originated by the French Deperdussin Co.

It may be well here to note that the word "monocoque" does not imply a monoplane with a "coque" or hull, instead of the ordinary fuselage; it actually means "single hull." That is to say, a body built entirely as a hull without internal bracings or fittings.

A number of machines have been called "monocoques," in which an ordinary fuselage had streamline formers fitted to it, and the whole covered over by a streamline casing. This type, however, is not a true "monocoque," as in the Deperdussin, in which the hull is built up on formers from three-ply wood covered with fabric. This system of building shaped woodwork on formers has been used by the Deperdussin people for the cockpit of their machines from the commencement, and it now proves equally efficacious for the whole of the body work.

The hull of the new machine is connected to the float by massive wood struts almost semi-circular in side elevation, like those of the recent Deperdussins seen at the Paris Show.

The wings are of an entirely original design, braced by a special form of girder work, and containing a most interesting form of control, which appeals to the writer personally as a distinct advance in design.

The workmanship in the machine is exceedingly good, and Mr. Koolhoven is to be congratulated on the firm's latest product. Lieut. Porte, R.N., who, with Mr. D. L. Santoni, is joint managing-director of the British Deperdussin Co., Ltd., hopes to carry out the experiments with this machine himself at an early date, and when it is thoroughly tuned up it should prove easy to sell to any Power really interested in hydro-aeroplanes for defence work.

The Accident at Marske.

The following letter has been received from a brother of the late Mr. Edward Petre. Further comment is reserved until the report of the Royal Aero Club on this unhappy occurrence is issued:—

"As brother of the late Mr. Edward Petre, as an engineer and one who has taken an interest in aeroplane construction for some time past, I should like to call your attention to some mistakes in the account of the sad accident published in your paper.

"On hearing the terrible news I went down to Yorkshire and investigated the occurrence, also spoke to all the people who had seen anything, and from what I could gather everything goes to contradict your statements that my brother 'was physically unable to control the machine any longer'; and that the pilot 'threw up his hands and let the machine go.' [The words quoted were merely a possible explanation, and were given, it may be remembered, simply as the story published by some papers.—Ed.]

"In support of my theory that Mr. Petre had not been troubled by the wind until the very last, I should like to mention the fact that he had steered by compass, and succeeded in striking the coast within a mile or two of the very spot he had intended to do so. He could not possibly have done this if he had been very much bothered by wind. Besides, everybody in the district who had seen him flying say the same thing, 'that he was flying perfectly steadily.' I examined the wreckage very carefully, and there was absolutely no evidence to show that the machine broke in the air, as you make out. In fact, everything pointed to the opposite. The main spars had not broken in the vertical direction, as you seem to think, but backwards. There was no sign of the 'three-ply wood' having come apart, or of the plane having burst, as you suggest.

"I should also like to point out that my brother, though reckless in some respects, was never so as regards flying. He had always condemned recklessness in a pilot. He never would have started on this flight had not the weather conditions at the commencement been perfect. If a restraining influence had ever been necessary I know perfectly well that Mr. Handasyde was fully competent to exert such influence.—BERNARD FRANCIS PETRE."

Aviation in Spain.

Many at Brooklands will remember Senor José del Perojo, formerly at the Hanriot School, where he showed he had the making of a very promising pilot, but was compelled to return to Spain. Senor Perojo is now editor of the "Nuevo Mundo," the smartest paper in Spain, and one which compares well with anything in this country, but he by no means forgets his visit to England, and sends the following charming letter and several photographs to THE AEROPLANE. His account quite removes any idea that aviation is being neglected in Spain. The enterprise of the "Nuevo Mundo" would be a credit to any British paper. Senor Perojo writes as follows:—

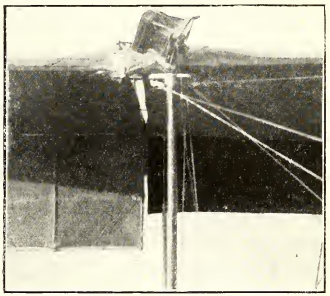
"I will send you now and then various photos of aviation



Señor Perojo and a Bristol biplane in Spain.

news in Spain, which are many. The machine shown in the large photo is a biplane designed and built in Madrid by three Spanish boys of 19, 18, and 19 respectively. It has flown at the very first attempt with a passenger and only a 50-h.p. Gnome. The French aviator, Mauvais, who was on the Aerodrome, bought it on the spot. I have joined them to build a new biplane, of which I send you a sketch.

"The autophotography was taken by placing a small 'Tenax' camera on the right extremity of the upper wing.



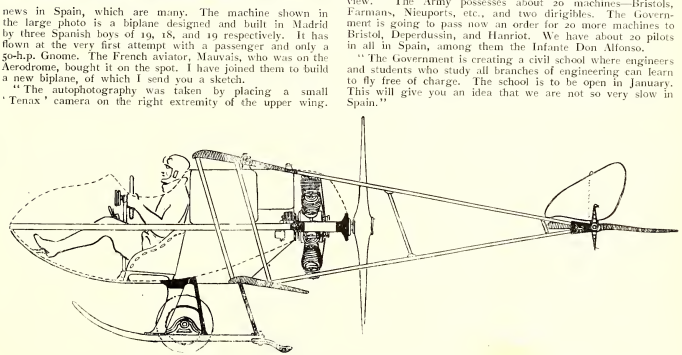
How our autoaerophotographic frontispiece was taken.

A wire went to the pilot, so that he could operate the shutter at will. I tried several cameras and several attachments, until at last I obtained this photo. The photo was taken on the occasion of some cavalry manœuvres. On the background you will notice a squadron of cavalry, while on the road you will see King Alfonso with two officers on horseback. The height was about 150 metres. We have an arrangement with Mauvais, so that he will take our photographer, Alonso, on all occasions, such as manœuvres, over the field, so we always secure the most interesting views.

"We are planning an aeroplane voyage from Madrid to Teutan (Morocco) on the occasion of the entry of our troops into that city. They will attach some floats. I intend, also, getting a first-rate two-seater monoplane for the use of my photographers, as the public appreciate very much our 'information from the sky,' as we call them. The photographers already have for their use two large touring cars and a small racing car. So we are always the first on the spot.

"Aviation in Spain is only seen from a military point of view. The Army possesses about 20 machines—Bristols, Farmans, Nieuports, etc., and two dirigibles. The Government is going to pass now an order for 20 more machines to Bristol, Deperdussin, and Hanriot. We have about 20 pilots in all in Spain, among them the Infante Don Alfonso.

"The Government is creating a civil school where engineers and students who study all branches of engineering can learn to fly free of charge. The school is to be open in January. This will give you an idea that we are not so very slow in Spain."



Señor Perojo's design for a small fast biplane. It bears a curious resemblance to the Grahame-White biplane just completed.

First Aid in Aviation.—II.

Transport of the Wounded Man.

In our first article we dealt with the first phase of first-aid—namely, the recognition of the general condition of the patient and the dressing of wounds. We now give instructions for the safe transport of the injured.

There are more ways than one of carrying a wounded man, and the methods being various, it appears inevitable that the enthusiastic bystander and casual philanthropist, who is usually the first to offer his services, should choose the worst.

"Perhaps it was well to dissemble your love,
But why did you kick me downstairs?"

sang the querulous poet, and the aviator in a spill sometimes feels inclined to inquire of those who wish to befriend him by taking him to a place of safety, whether they wish to take him to bits. If he himself has some idea of how he should be carried, it will be at least a help towards getting himself carried in the right way, and be the means of saving a good deal of unnecessary pain to a fellow flier in a like case.

When a man has been badly injured about the head, chest or abdomen he should be carried in a recumbent position, and always on a rigid support. In default of a proper stretcher, a gate, door, or a hurdle will do; but a stretcher of sorts may be improvised by taking a couple of sacks, cutting off the bottom corners, and thrusting poles through them. Overcoats may be utilised in a similar fashion by turning in the sleeves, putting the poles through them, and then buttoning the coat underneath. The stretcher should be placed at the head of the injured person, and he should then be gently lifted backwards on to it. When no such serious injury is in question, and the patient is conscious, one of the improvised seats here illustrated may be employed.

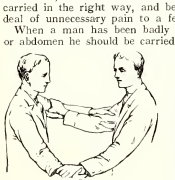


Fig. 1.

The two-handed seat, Figure 1. The bearers face each other, bend down on each side of the patient, and either lock the fingers together or grasp each other's wrists under the hip of patient. Then each passes his free hand round the back of the patient and grasps the other's shoulder.

The three-handed seat, Figure 2. The bearers face each other and form the triangular seat, as shown, underneath the patient. One of the bearers then passes his free hand



Fig. 2

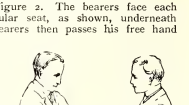


Fig. 3.

round the upper part of the patient, and seizes the shoulder of the other bearer.

The four-handed seat, Figure 3. This is formed by the two bearers standing opposite to each other, each grasping his own wrist with one hand, and the fore-arm of the other bearer with his own disengaged hand.

If the pain of removal should bring on faintness smelling salts should be held beneath the sufferer's nose. Aviators cannot be expected to make a hobby of carrying bulky bottles of smelling salts in their pockets on the chance of requiring them in such circumstances, but there is a modern equivalent to the smelling bottle which is much more effective and quite portable. It is called "Vaporole" aromatic ammonia, and consists of a tiny glass capsule containing ammonia surrounded by a little silken sac. When required the glass capsule is crushed between the fingers and the pungent essence is given off for about a quarter of an hour. They are so small that several dozens could be carried if desired in the waistcoat pocket, and they are so useful in many types of emergencies that one or two should be in every aviators' pocket.

In our next issue will be found detailed instructions for the application of bandages.

(To be continued.)

The D.G. Gilmour Memorial.

The Gilmour Memorial Fund has recently been increased by the sum of £5 14s. 6d., collected by that indefatigable worker, Mrs. Handasyde. This amount is made up thus:—

				£	s.	d.
Mr. Algernon Toop	...	...	...	1	0	0
Mr. F. Warren Merriam	...	...	...	0	10	0
Mr. R. J. MacGeagh Hurst	...	...	...	3	14	6

The latter sum was the amount necessary, in addition to that already subscribed, to make an even £200.

A second subscription has been received from Miss Bessie Bowker of 5s., and Mr. Ralph Wallis sends 1s.

Yet a further £7 8s. 6d. has been added to the fund under the following circumstances:—A fund was opened lately to erect a memorial at Brooklands to Messrs. Gilmour, Fisher, Hotchkiss, Astley and Johnson, and Mr. Louis Noel collected the above sum at Hendon. Eventually a discussion arose as to the form the memorial was to take, and as the Hendon subscribers did not agree to the proposal of the Brooklands subscribers, it was decided that the sum subscribed at Hendon should be added to the Gilmour Memorial Fund instead. The following is the list of subscribers:—

	£	s.	d.
L. Noel	0	10	0
E. R. Whitehouse...	0	10	0
G. W. Mapplebeck	0	5	0
M. G. Christie	0	5	0
L. Spink	0	7	6
H. Blackburn	0	5	0
Sydney Pickles	0	7	6
L. Seymour Metford	0	5	0
Lewis W. F. Turner	0	7	6
Pierre Gratien	0	3	6
Marcel Desoutter	0	5	0
Denys Ware	0	5	0
G. W. W. Hooper...	0	5	0
J. C. Hafahan	0	10	0
D. Edmund Stoddart	0	2	6
N. O. Spratt	0	5	0
Roberts, G. C.	0	2	6
A. W. M. Ramsay	0	2	6
P. Gandillon	0	2	6
H. J. Madocks	0	10	0
C. G. Howard Wright	0	5	0
W. C. K. Birch	0	5	0
W. Francis...	0	5	0
C. de B. Stocks (Mrs.)	0	5	0
Total amount added is	£13	9	0

For Mrs. Hardwick.

We have great pleasure in acknowledging on behalf of Mrs. Arkell Hardwick the receipt from Mr. Trevor Handley of a cheque for £10 10s., and from Mr. Alfred S. Marks of £10. Further sums, large or small, will be equally welcome. Cheques and postal orders should be made payable to Mrs. Hardwick, and may be sent to this office.

Additional sums received are, "Anonymous," 10s. 6d.; "Anonymous," £2 2s.; Mr. Charles Parke, £5; F. Page, 2s. 6d. A letter from Tunbridge Wells has also been forwarded to Mrs. Hardwick.

The Aeronautical Society.

The fourth meeting of the Society will be held on Wednesday, January 15th, at 8.30 p.m., at the Royal United Services Institution, Whitehall, when Professor W. C. Unwin, F.R.S., will preside. Mr. F. Handley Page, A.F.Ae.S., will read a paper, to be followed by a discussion on "The Comparison of Monoplanes and Biplanes, with special reference to the Stresses in each type."

The fifth meeting will be held on Wednesday, January 29th, at 8.30 p.m., when Brigadier-General D. Henderson, D.S.O., C.B., will preside. Mr. Mervyn O'Gorman, M.I.M.E., A.F., Ae.S., will read a paper, followed by a discussion on "Stability Devices of Aeroplanes."

Major F. H. Sykes and Mr. W. O. Manning have been accepted under Rule 14, to fill the vacancies on the Council.

Members are reminded that under the rules nominations of candidates for election to the council must be received by the secretary not later than March 9th.

Bertram G. Cooper (Sec.).

An Argentine Record.

The following notes on a record over-water flight in the Argentine have been kindly sent by Mr. C. K. Tindall, of Buenos Aires :—

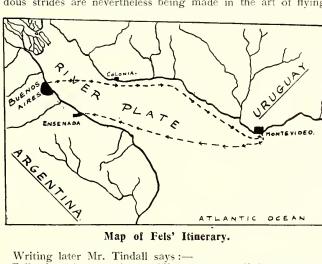
What undoubtedly constitutes a world's record for over-water flights was the magnificent performance of Corporal Teodoro Fels, of the Argentine Army, who flew on December 1st from Buenos Aires to Monte Video and returned the following day.

At daybreak on the 1st Fels took his Blériot monoplane out at the military aerodrome, "El Palomar," Buenos Aires, and after going through the usual preliminary tests, rose steadily to 1,300 metres at 5.18 a.m. Passing over Buenos Aires, he set out for Colonia, on the coast of the neighbouring Republic of Uruguay, and, keeping the coast-line well in view, he eventually made Monte Video. This place was reached without mishap, and a landing successfully effected at El Carrasco, just outside the city, at 7.38 a.m. Fels was the object of a most cordial and enthusiastic reception.

The distance—as the crow flies—between Buenos Aires and Monte Video is 145 miles, but the actual route taken was approximately 150 miles, and the actual time employed two hours and twenty minutes.

Corporal Fels intended to make the return journey the same day, but demonstrations of cordial reception, etc., and a very precise revision of his machine, obliged him to postpone the return until the next day. Having gone through the customary preliminaries, Fels left Uruguayan soil at 4.20 p.m. on the 2nd, and, rising to 1,000 metres, was soon out of sight. His first glimpse of Argentina afforded him no idea of his whereabouts, and, having completely lost his bearings, he had to land and ascertain his position, which turned out to be a small village near Ensenada. Hopeful of being able to complete the journey back to the aerodrome, he started off again, but his engine failed through want of petrol. Unable to proceed further he decided to return to Buenos Aires by train, and as news had already reached the city of his movements, aviation enthusiasts, etc., waited his arrival at the railway station, where he was given a most hearty reception.

Needless to say, Corporal Fels is the hero of the hour, and it is interesting to note that, although at this end of the world we are far from the sphere of aviation proper, tremendous strides are nevertheless being made in the art of flying.



Map of Fels' Itinerary.

Writing later Mr. Tindall says :—

Following close on the world's over-water flight created at this end of the world, comes another most successful record for Argentina of 3,000 metres, effected by Senor Alberto Mascias, honorary instructor of the "El Palomar" Military Aerodrome.

Leaving this aviation ground at 6.40 a.m. on a Blériot monoplane, Senor Mascias rose steadily to 2,000 metres, flying in the direction of Lujan. He remained some 12 minutes at this height unable to rise another metre. In spite of the temperature and rarity of the atmosphere at this altitude, the aviator persevered, and eventually succeeded in reaching 3,000 metres, when he decided to descend. He shut off his Gnome engine and fell vertically some considerable distance until near earth, when he endeavoured to start the engine. Something failed, and fortunately the aviator was able to glide safely to earth, landing eventually at Lujan, in a maize field, some 40 kilometres from Buenos Aires. He was accorded a very enthusiastic reception and at 5.20 the same afternoon left for Buenos Aires, where he arrived without mishap. This record is officially recorded on a barograph attached to his aeroplane.

Previous Argentine records are :—

Pablo Castaibert,	Sept. 24, 1912.....	1,040 metres.
Teodoro Fels,	Oct. 6, 1912	1,280 metres.
Jorge Newbery,	Oct. 13, 1912	2,323 metres.

Corporal Fels, who holds the world's record for over-water flight, made a very successful flight over and around Buenos Aires, but was compelled to land owing to bad working of his engine.

Rumour has it that he (Fels) intends to fly back to Monte Video to accept a prize the neighbouring Republic has graciously given him.

A wire from Buenos Aires, January 6th, states that Jorge Newbery, with a German, Herr Labbe, as passenger, crossed the Rio de la Plata on a monoplane in two hours and forty minutes. He landed safely at Montevideo.

Aviators at Play.

The enormous success of the performance of "Three Little Maids," given at Sunbury last year, has encouraged the promoters of that merry performance to try their luck again, but on a bigger scale, at the Holstein Hall, Weybridge, in aid of the Weybridge Cottage Hospital, on January 23rd and 24th. Mr. R. O. Cary, the "impresario" on that occasion, is hard at work preparing for the performance. The cast has been enormously strengthened, and the chorus has been enlarged. The three little maids will be played by Miss Muriel George (late of the Follies), Miss Higgins and Mrs. Cary. The part of Ko-Ko the Caddy will again be played by Mr. Dashwood Lang, with Miss Vera Yates as Gretchen. Among the men Mr. Ellice Sassoon is playing Delorme; Mr. Ronald Charteris, Lord Cheyne; and Mr. Grafton Lewis the part of Bryan. In the tea-shop scene we are promised a sight of their first appearance on any stage of Messrs. Valentine, Sopwith and Hamel. And as giving a "cachet" to the whole performance, Mr. S. F. Cody, who has in his time played many leading parts both on the stage and off, has consented to appear, though his actual part in the performance is not at the moment being disclosed.

A Quick Passage.

"Amongst the recent batch of Bristol pupils qualifying for their brevet is Lieut. Powell, of the Northamptonshire Regiment, who took his ticket on Saturday, December 21st. Everybody remarked how well he went during the test, especially in view of the fact that he had only made one previous circuit, and that on the day before."—BROOKLANDS OFFICIAL REPORT.

Mr. Powell is now a qualified aviator within the meaning of the Act, and Colonel Seely would no doubt refer to him with gratification as a "trained military pilot." Without intending the least slur on either the Bristol method of tuition or on Mr. Powell's evident ability, the above quotation shows the utter futility of the present certificate tests, which call for no actual experience, but merely for luck in the weather, and quickness of hand and eye.

Notes on Brooklands.

Considerable interest has been aroused at Brooklands by the arrival of "Vickers VII," a new monoplane fitted with a 14-cylinder 100-h.p. Gnome engine. This machine has already flown well under private test on the south coast, and certain alterations have been made to it which have improved it since then. It should, therefore, be a welcome addition to the flying machines at Brooklands, where the Vickers' monoplanes are doing excellent work. Mr. Barnwell recently took the old "Vickers V." up to 6,000 ft. without forcing it up at all, and at that height it was still climbing steadily.

Another interesting arrival is the de Bolotoff triplane, of which news has been heard at intervals for the past three or four years. Prince Serge de Bolotoff kindly permitted the writer to inspect the machine in detail last week under promise that no description should be published, so beyond stating that the machine is a very good piece of work, and is fitted with a particularly fine engine of 120 h.p., no more can be said about it at the moment.

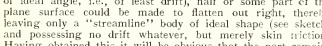
The A.B.C. Engine Co., who have now joined forces with one of the biggest engineering firms in England, are busy finishing the tiny 8-cylinder air-cooled engine, which is to give something approaching 75 h.p., with a weight of less than 200 lbs., and a full description of this engine will be published as soon as its tests have been satisfactorily carried out.

A Suggestion for the Design of a Variable Speed Aeroplane for Naval or Military Purposes.

Y C. W. PIDCOCK.

It will be agreed that in general terms, aeroplanes of large area (low plane loading) will be slow in speed, and those of small area (high plane loading) will be high in speed, for one given angle. Now, if gear can be made variable (as provided in the invention of the writer) speed will also be variable. A brief outline of method of obtaining variable area will here suffice (owing to the mechanical arrangement being unpatented).

Suppose that in a biplane of very large area (and with planes of ideal angle, i.e., of least drift), half or some part of the plane surface could be made to flatten out right, thereby leaving only a "streamline" body of ideal shape (see sketch) and possessing no drift whatever, but merely skin friction. Having obtained this it will be obvious that the part remaining will support all the load; therefore, on opening up engine its loading and speed must necessarily rise automatically, if the fundamental idea is true.



Effect of flattening of plane surfaces.

If the engine can now be opened out to its full extent, obviously an increased speed will result. Hence we have a variable speed aeroplane. Looking at the problem from a different point of view, suppose a machine is designed for a very high speed, say 100 miles per hour. To get this, ideal conditions will be necessary. Firstly, the area must be small, and, therefore, loading very high; secondly, the camber of plane must be the ideal. Say that the horse power necessary for this is 100. Now reasoning backwards from machine at full speed and with upward velocity of say 50 ft. per minute. Then if the full area be gradually brought into play, the upward velocity will rise enormously to say 600 ft. per minute, since the lift will be much greater than that necessary to support machine—the speed will, of course, be lowered owing to increased drift force. Now throttle down the engine until the required upward velocity is reached (say 50 ft. per minute for safety in sudden air pockets; although the enormous upward velocity always obtainable by opening up engine will lessen the danger of the latter very considerably). Then the resulting speed will necessarily be very much lower.

Now it has been suggested to the writer that any tipping of the machine as a whole will alter the relative direction of the wind on the plane, and thereby cause a difference of pressure above and below the respective sides of the streamline (flattened part of) plane. But owing to the fact of arching the planes themselves to rise or fall (and using the throttle) the above phenomenon will not occur to any great extent; it being unnecessary to use the elevator on the tail.

Even if there were a small effect it could very easily be remedied by having a special elevator at the stern operated by any difference of pressure occurring on the flattened plane.

In practice it will not be necessary to lessen the area very much for the desirable variation in speeds, according to rough calculations. Any criticisms of the preceding line of thought would be welcomed by the author.

The Question of Stability.

M. Alexandre Sée has recently published a book entitled "En quoi consiste la Stabilité," dealing with the delicate questions concerning the instability of aeroplanes. M. Sée is one of the leading exponents of the "Theory of the Three V's," which are the vertical V formed by the dihedral angle of the wings, the longitudinal vertical V formed by the angles of the main and tail planes, and the horizontal V formed by setting back the tips of the wings behind the leading edge at the centre.

He points out that calculations are actually of no help in solving the questions which are put to them, and that practice solves the question without them. He commits himself to the statement that it is probable that evolution will tend more and more towards "S" shaped surfaces (i.e., those in which the trailing edge has a distinctly negative angle) as they possess at once inherent stability and a very satisfactory lifting quality from which as yet the full efficiency has not been obtained. He continues, "They will perhaps permit the entire suppression of the second stabilising surface, and at the least enable one to give it a very slightly different angle of attack, and consequently a considerable degree of usefulness."

M. Sée deals comparatively with automatically stable machines and those of controlled stability, pointing out that the former are not appreciated by pilots, because they are sluggish and do not respond rapidly to the controls. The latter, he points out, are dangerous, saving, in fact, that a machine of neutral equilibrium is too near unstable equilibrium, and a mere nothing will transform one into the other. Also, the equilibrium is constantly subordinated to the skill of the pilot, and one ought to guard against possible failure of the pilot. He concludes that pilots should not obtain their stability at the price of constant strain on the mind.

He points out that there are various possible means of remedying these inconveniences: (1) Limitation of the travel of the elevator; (2) The employment of a spring tending to bring back the controls to a middle position; (3) The design of the controlled surface itself, and of its curvatures. Here he discusses the question of a machine which is what the French call "engagé," namely, diving so that it cannot be got back. As M. Sée describes it, "a descent being accidentally increased transforms itself into a fall, because the action of the air on the elevator renders its action impossible. Various dispositions of the axis of oscillation of the elevator have been attempted, but none give satisfactory results because the surfaces of the stabilisers are concave on the lower side, or at the best flat. But if one used an elevator having the lower surface convex 'engagement' would not be possible." In this relation M. Sée recalls the flexible elevator of the Wright. Fourthly, he refers to the employment of mechanically automatic stabilisers. The above refers, of course, to longitudinal stability.

Lateral Stability.

As to lateral stability, he argues that it should be absolutely automatic, and that the numerous inventions based on the action of the pendulum or gyroscope are too brutal. On the other hand, a machine made perfectly stable in this fashion would be too sluggish. M. Sée also points out that a machine should possess stability of speed, viz., (1) The machine should keep a constant speed and return thereto if it is exceeded; (2) It should have stability of speed in direction. That is to say it should not deviate or drift rapidly; (3) It should have stability in vertical speed, so that it should not rise or descend more quickly than is safe. This would avoid the danger of stalling a machine owing to rapid rising, and it would also prevent unsafe diving. For this last purpose the author indicates the Doutre automatic stabiliser.

To guard against failure of motors, M. Sée advises that the axis of operation of the propeller should be a little below the centre of gravity, so that if the engine stops the machine has a tendency to dive. Finally, he gives his ideas of an improved machine so far as present knowledge permits. These are the chief points:—(a) Canard type; (b) Long fuselage in front; (c) "S" shaped surfaces; (d) Elevator in front with convex lower surface; (e) Limitation of amount of movement to the elevator; (f) No tail; (g) Propeller behind, nothing behind the propeller, axis below the centre of gravity; (h) Motor alongside the pilot; (i) Landing skids very long in front; (j) Moderate speed (45 m.p.h. flying and 24 m.p.h. landing); (k) Equilibrium almost neutral. Automatic longitudinal stabiliser. Either warp or aileron operated by automatic lateral stabiliser. Sufficiently large moment of inertia and a speed indicator.

He terminates by saying that such a machine "suitable for a father and a family" would beat no records, and would win no races, and it is understood that it would be less pleasing to fly than a trickier machine just as an old hack is less agreeable to ride than a thoroughbred full of nerves, but speed races have had an unfavourable influence on the development of construction.

Though one may disagree with M. Sée on a number of points, it is, nevertheless, interesting to consider his view, especially as regards the suggestions as to the Wright type elevators, and the "S" shaped surfaces.

The Week's Work.

MONDAY, December 30th.

R.F.C. (Farnborough).—Cold east wind 20 to 30 m.p.h. on the ground. On Bréguet 211, Major Raleigh 10 mins. On 213, Major Raleigh 10 mins.; Lieut. Playfair 5 mins. Mr. de Havilland several flights on B.E.2.

Hendon.—At Grahame-White School, majority of pupils still away on Christmas vacation. Mr. Manton took out school 'bus for four circuits, after which Mr. R. H. Carr was doing straights, and continuing to show great improvement. Mr. Noel testing brevet machine for Mr. Manton, a Grahame-White 1912 pupil who had signified his intention of competing for the cross country flight prize of £100 offered by the company. After Mr. Manton had made further tests with this machine, prior to making attempt in afternoon, engine trouble arose, and it was necessary to postpone until next day.

At Deperdussin School, Mr. Brock out early testing No. 4 machine. Later Mr. Brereton giving instructions to pupils on No. 2 machine. Mr. Valazzi, Mr. Scott, and Mr. Phelps all getting in good practice.

At Blériot School, Lieut. Eric Conran out on No. 3.

Brooklands.—At Vickers Ltd., pupils not having recovered from the Christmas holidays, no flying was done except two short flights of 10 minutes each by Messrs. Barnwell and Knight in afternoon on No. 5 monoplane.

At Bristol School, Mr. Bendall testing in afternoon, then taking Capt. Richards and Mr. Archer for tuition.

At Duckrocq School, Mr. Alcock for 10 and 12 mins. Later Mr. McAndrew figures of 8, and Mr. Alcock another 10 mins.

Salisbury Plain.—At Bristol School, M. Jullerot first out, afterwards giving tuition to Lieuts. Vernon, Marix, Bowhill, Vaughan, Littleton and Bigsworth. These pupils also out with Mr. England. Lieut. Rees on biplane alone. Prince Cantacuzène made first flight on the 80 h.p. monoplane.

TUESDAY, December 31st.

R.F.C., Farnborough.—Strong south-easterly wind from 30 to 40 m.p.h.; very cold and cloudy. Major Raleigh out for 10 mins. on Bréguet 210. Conditions too bad for further flying.

Hendon.—At Grahame-White School. Last day on which the 1912 pupils could compete for £100 cross-country prize, but owing to bad weather impossible for Mr. Manton's attempt.

At Blériot School.—Messrs. Reilly, Williams and Desoutter all out.

Brooklands.—At Vickers, Ltd.—Wind prevented flying until late in afternoon, when Mr. Barnwell was out for about 10 mins. on monoplane No. 5.

At Bristol Co.—Mr. Merriam several tests during day.

WEDNESDAY, January 1st.

R.F.C., Farnborough.—Normal southerly wind, turning to south-easter later. On Maurice Farman 215 Capt. Brabazon 10 mins., and had to make forced descent at Ewshot. After necessary repairs Lieut. Herbert with Capt. Brabazon as passenger flew back in 5 mins. Capt. Pigot 5 and 8 mins. Lieut. Herbert 6 mins. With Lieut. Gould 22 mins. round Farnham. On 266 Capt. Becke with Mechanic Skinner 23 mins. over Ewshot. On Bréguet 210 Major Raleigh with Capt. Beor 11 mins. On B.E. type 206 Lieut. James 11 mins., Lieut. Joubert de la Ferté 8 mins., both flying well. Mr. de Havilland on B.E.2.

Hendon.—At Deperdussin School.—Mr. Brereton out on brevet machine No. 3, and after testing handed over to Mr. Valazzi. Mr. Scott good straights. Mr. Phelps also handling this machine very well.

At W. H. Ewen School Mr. Baumann had pupils out Mr. M. Zubiaga made excellent progress on mono. No. 1, Lieut. Bayly several fine straights on 28-h.p. Candron

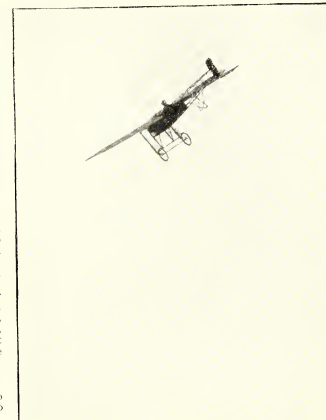
At Blériot School, Lieut Conran good circuits on No. 3, and MM. Teulade and R. Desoutter straights on No. 1.

At Blackburn School, several flights during day by Mr. H. Blackburn, testing rolling machine. In afternoon Mr. Laurence Spink had 15 minutes practice.

Brooklands.—At Flanders, Ltd., Mr. Ravnham out first time on monoplane F.4. No. 4, at noon for circuits, and returned for adjustments. Again at 3 p.m. several circuits, all right.

At Bristol Co.—Mr. Merriam with Mr. Neville. Out later with Lieuts. Thompson and Blatherwick. In afternoon Mr. Merriam took Capt. Rickards. Mr. Bendall out with Mr. Neville and Lieut. Blatherwick. Lieut. Thompson good straights.

Salisbury Plain.—Bristol School.—Lieuts. Bigsworth, Vernon, Bowhill, Littleton, Marix, Vaughan, and Mr. Tower all out in turn with Messrs. Jullerot, Busteed and England. Lieut. Rees two fine flights on biplane, Prince Cantacuzène on 80 h.p. mono. for 40 mins., and 20 mins.; excellent. Wind quite strong.



Mr. Desoutter doing one of his startling spirals during the Exhibition Flying at Hendon on Thursday last.

THURSDAY, January 2nd.

R.F.C. (Farnborough).—Normal southerly wind, very misty all day. On Maurice Farman 215, Lieut. Herbert 4 mins. With Lieut. Gould for instruction 15 mins. With Mechanic Ling 17 mins. at 1,200 ft. Capt. Pigot 15 mins. at 1,200 ft. On 260, Capt. Becke 8 mins. With Mechanic Braithwaite 10 mins. at 1,100 ft. On "B.E. type" 206, Lieut. James fine flight of 35 mins. at 5,000 ft. Lieut. Joubert de la Ferté 4, 10, and 15 mins. Mr. de Havilland long flights on "B.E.2". Mr. Raynham on new Flanders monoplane passing trial tests did some very fine flying. New factory pilot out doing straights on old "B.E.2." Lieut. Gould straights on Maurice Farman 215, handling machine well for first time. On Bréguet 210, Major Raleigh 10 mins. 1,000 ft. With Lieut. Chinnery 9 mins. at 1,500 ft. With Capt. Beor 3 mins. and 14 mins. 1,200 ft., everybody flying well.

Hendon.—At Grahame-White School, in afternoon usual Thursday exhibition flights by Messrs. Noel and Desoutter before quite large number of people for time of year. Mr. Gates flying No. 5 in fine form, followed by Mr. Sydney Pickles and Mr. Manton. Later Mr. Desoutter again on Blériot, and new pilot, Mr. Cheeseman, making straights on

school 'bus. During the afternoon Mr. Noel, in addition to his exhibition flights, carried three passengers.

At Deperdussin School, Mr. Brock and Mr. Brereton both busy on No. 3 and No. 4 machines respectively. Engine in No. 4 not quite well, so taken back to shed. No. 3 Brevet handed over to pupils, Messrs. Scott, Phelps, Valazzi, and Andrews, all got useful practice.

At W. H. Ewen School, all pupils out under Mr. Ewen and Mr. Baumann. Commencing at 2 p.m., practice continued all afternoon until dark. Mr. Baumann gave instructional flights to Lieut. Moody and Messrs. Zubiaga and McGregor, each of whom afterwards did some good solos on 28-h.p. Caudron. Lieut. Bayly out on 28-h.p. Caudron and put up very neat short flights, showing capital judgment in landings. Messrs. Russell, Lawford and Warren in turn flying 35-h.p. Caudron and getting well on way for ticket. Mr. Baumann for flight on 35 two-seater Caudron and put up fine exhibition. Rising to nearly 1,000 feet he made a splendid curved glide back to aerodrome. At close of school work Mr. Ewen out on 60-h.p. two-seater Caudron, taking his wife with him as passenger.

At Bleriot School, Lieut. Conran on No. 3 very busy doing circuits at about 100 ft. and landing with nice glide. Messrs. Williams, Teulade, and R. Desoutter all at rolling practice, latter two doing straights also. Later on Mr. Slack took No. 3 up to try and found she flew quite nicely at about 100 ft. on about ½ throttle.

Brooklands.—At Vickers, Ltd., early in the morning, Mr. Knight out with both biplanes, doing about quarter-hour on each at about 400 feet, weather being quite calm. After breakfast Mr. Barnwell made test flight on No. 5 monoplane, then gave place to Mr. Knight, who was out about 10 mins., rising to about 800 feet. Mr. Barnwell then for about half-hour on No. 5 monoplane, reaching rather over 3,000 feet. In afternoon Mr. Barnwell again took this machine out and climbed to 6,100 feet, being in air just over an hour.

At Eadkins, Ltd., Mr. Raynham at 9.45 a.m. a few circuits and at 10.8 a.m. started for Farnborough; quite clear and fine at Brooklands, encountered fog and rain, lost sight of ground, picked up bearings at Fleet Pond, and finally found Farnborough; passed tests; climb 1,000 feet three mins.; speed 67 m.p.h. This is the last machine for the War Office. Machine out first time on Wednesday and passed all tests next day. Biplane is having new planes made.

At Percival School Mr. Humphreys took Caudron for circuits and practice eights at 1,000 feet. Later, successfully passed brevet tests, average height 400 feet. This is first Caudron brevet at Brooklands, and a very fine performance.

At Bristol Co.—Mr. Merriam taking Lieut. Thompson for tuition; pupil then out alone. Mr. Bendall was with Mr. Neville and Lieut. Blatherwick. Capt. Rickards up with Mr. Merriam, then alone for first time. Mr. Archer for tuition with Mr. Manni. Lieut. Thompson fine figures of eight; Mr. Bendall with Mr. Neville and Mr. Archer; Captain Rickards and Mr. Lane straights and latter circuits.

Salisbury Plain.—At Bristol School, M. Jullerot took Lieut. Bowhill for tuition, pupil then for first solo. Lieut. Blegsworth also alone. Mr. Busteed testing school single-seater monoplane, then taking up Lieuts. Vernon, Vaughan, and Marix on biplane. Mr. England with Lieuts. Vernon, Bowhill, Rees, Vaughan, and Mr. Tower. M. Jullerot with Lieuts. Marix, Littleton, Vaughan, Vernon, and Mr. Tower. Prince Cantacuzene on 80-h.p. for half an hour. Lieut. Rees went for first half of certificate.

FRIDAY, January 3rd.

R.F.C., Farnborough.—On "B.E. type" 206, Lieut. James 15 mins. at 1,000 feet, Lieut. Joubert de la Ferté 12 mins. In afternoon hockey match took place between mechanics of No. 2 squadron and No. 4 squadron, resulting in draw of 4 goals each.

Brooklands.—At Bristol Co., Messrs. Bendall and Merriam testing. Lieut. Thompson figures of 8, and then went for certificate, passing in good style.

SATURDAY, January 4th.

R.F.C., Farnborough.—Strong south-westerly wind, plenty of rain. Conditions too bad for flying.

SUNDAY, January 5th.

Everywhere.—No flying. Warm, windy, and wet.

For the Weybridge Hospital.

It is hoped that everyone who can manage to do so will support the performance of "Three Little Maids" at Weybridge on January 23rd and 24th. Tickets are priced from 5s. to 1s., and may be obtained from Mr. R. O. Cary, Riverside, Sunbury, or c/o The Royal Aero Club, 166, Piccadilly.

Mr. Sopwith's New Move.

Mr. Sopwith has now definitely taken possession of his works at Kingston-on-Thames, which are located in an old skating rink close to the station, where work will be continued at once on his high-powered hydro-aeroplane for the Monaco meeting, and on a second tractor biplane for the Admiralty. His sheds at Brooklands are being retained for testing purposes. It is pleasing to be able to note that the Sopwith biplane already delivered to Eastchurch is one of the favourite machines of the naval aviators there, and that it seems to lift the pilot with either one, two or three passengers with equal facility.

The First Coloured Supplement.

With the issue of The Aeroplane published on January 16th there will be presented the first coloured supplement ever presented with an aviation paper. The picture is from a painting by Cyrus Cuneo, one of Whistler's most successful pupils, an artist who has the ability to impart life and action to his work in an unusual degree. The subject is an aeroplane with a passenger flying over the Aerodrome, and seen from above, the sheds and the crowd being apparently five hundred feet or so below. Mr. Cuneo has caught exactly the spirit of flying and has produced what is probably the best flying picture yet painted. The plate will be produced on art paper, suitable for framing, and as the demand for it is sure to be very great it will be well to order copies of The Aeroplane in good time, as no further copies will be obtainable when once the supply is exhausted.

Busy Days at Hendon.

The proprietors of the Hendon Aerodrome, ever ready to show their independence of the weather, have now concentrated their attention on Thursday exhibition flights, so as to provide at least one good flying day a week if the week-ends are bad. Last Thursday, which was the first day for a month, provided some very good flying, no less than ten machines being out at the same time, including the school machines. Mr. Noel on the 80-h.p. Farman, and Mr. Desoutter on the Blériot were both flying in even better form than usual, while Messrs. Gates, Manton and Pickles in turn were performing splendidly on the 50-h.p. Grahame-White biplane. Mr. Pickles terminated his flight with a spiral glide with the engine stopped, which quite startled the onlookers.

Lieut. Eric Conran, a Caudron pilot, who is now learning to fly a Bleriot, caused his friends considerable alarm by taking a 28-h.p. school machine up to about 200 ft., and doing Hamelesque circuits of small radius till the machine began to side-slip, when he dived and straightened out again. The performance shows either exceptional ability or wonderful luck, though one is inclined to think that the former predominated.

Instructor Brock and numerous pupils, with three Deperdussins, were very busy all the afternoon, as were Messrs. Lewis Turner and the Ewen pupils with two Caudrons, and Mr. Seymour Axeford and three Blériots. As a matter of fact, the gyrations of the school machines provide a most interesting variation from the faultless flying of the trained pilots, and these Thursday afternoon shows are well worth seeing.

On Saturday last M. Verrier was out in a 30-mile wind testing another brand new Maurice Farman for the Flying Corps. Mr. Noel was up as usual on the 80-h.p. Farman, and Mr. Desoutter on the 50-h.p. Blériot, seeking steady wind at some 3,000 ft., lost himself in the clouds and came down somewhere near Enfield. As he disappeared before 4 o'clock and no news was received from him till he arrived in person at 7.20, great anxiety was felt about his fate, for Desoutter personally is very popular, and everyone would be considerably annoyed if he damaged himself.

A new machine of much interest has just been finished in the Grahame-White shops. This is a tiny biplane, on the general lines of the new Henry Farmans, but fitted with a 35-h.p. Y type Anzani engine. It is very light and should make a capital little mount at a low price for the private owner, or for military school work.

Aviation in Ireland.

The Dublin Aviation School, which is now run solely by Messrs. Rea and Mullins, have secured a practice ground at Kinmage, which has been duly passed as suitable for the purpose by Mr. Dan Gillman, Secretary of the Irish Aero Club, and as soon as it is in working order exhibitions will be given on Saturdays of each week, and probably on Wednesdays. Messrs. Rea and Mullins are both members of the Irish Aero Club, and intend to run the school strictly in conjunction with the club.

Royal Aero Club Certified Trials.

Speed Trials Regulations (Aeroplanes).

1. Certificates of speed will be delivered in respect of flights over a straight course of not less than 1 kilom. Each trial shall consist of four flights out and back in quick succession, and the times will be taken at the moment of passing each mark. The speed of the trial shall be the mean of the speeds of the flights out and back.

2. The competitor shall rise from the ground to the height at which he proposes to cover the measured distance, and shall maintain approximately the same level throughout the trial.

3. All flights must be controlled by one official observer assisted by at least one official timekeeper, both previously approved by the club, and a mark keeper, approved by the observer, at each mark.

4. The course over which the flight is accomplished must be certified by a surveyor approved by the club, and checked by the observer, the surveyor's plan being lodged with the club.

5. Entries must be made upon the entry form provided for the purpose, and must be accompanied by a cheque for £5 5s., the amount of the fee. The entry form, which must be duly filled up as regards the nature of the test and full particulars of the aeroplane, must reach the secretary at least seven days prior to the trials.

If desired by the competitor, the carried weight shall be recorded on the certificate. For details, see regulations 1, 2, and 3, weight carrying.

Vertical Speed Trials Regulations (Aeroplanes.)

1. Certificates for vertical speed, i.e., climbing speed, will be delivered in respect of flights recorded by barograph and controlled by an official observer appointed by the club.

2. The barograph must be provided by the competitor, and be provisionally approved, set, and sealed by the observer prior to the start.

3. The record sheet of the barograph must travel at least 6 ins. in one hour

4. The test shall be reckoned to have commenced at the time when the competitor shall have risen 100 feet as registered on the barograph.

5. The certificate will state the time taken to rise 1,000 feet, 2,000 feet, and so on per 1,000 feet above the 100 feet starting level. Failure to attain a height of 1,000 feet above the starting level will be recorded on the certificate.

6. After the descent the competitor shall deliver the barograph to the observer, who shall take charge of it and deliver it sealed to the Royal Aero Club for examination. In the event of the competitor alighting at a distance from the starting point, he shall immediately take steps to inform the observer of his whereabouts.

7. Entries must be made upon the entry form provided for the purpose, and must be accompanied by a cheque for £5 5s., the amount of the fee. The entry form, which must be duly filled up as regards the nature of the test and full particulars of the aeroplane, must reach the secretary at least seven days prior to the trials.

If desired by the competitor, the carried weight shall be recorded on the certificate. For details, see Regulations 1, 2, and 3, weight carrying.

Height Trials Regulations (Aeroplanes.)

1. Certificates of height will be delivered in respect of flights recorded by sealed barograph. The ascent must be performed in the presence of an official observer, who will independently of the barograph record the time of leaving the ground, and, if possible, alighting.

2. The barograph must be provided by the competitor, and be provisionally approved, set, and sealed by the observer prior to the start.

3. After the descent the competitor shall deliver the barograph to the observer, who shall take charge of it and deliver it sealed to the Royal Aero Club for examination. In the event of the competitor alighting at a distance from the starting point, he shall immediately take steps to inform the observer of his whereabouts.

4. Entries must be made upon the entry form provided for the purpose, and must be accompanied by a cheque for £5 5s., the amount of the fee. The entry form, which must be duly filled up as regards the nature of the test and full particulars of the aeroplane, must reach the secretary at least seven days prior to the trials.

If desired by the competitor, the carried weight shall be recorded on the certificate. For details, see Regulations 1, 2, and 3, weight carrying.



The First Brevet of 1913. Mr. G. N. Humphreys, who passed on a 35-h.p. Caudron at Brooklands on January 2nd.

Weight Carrying Trials Regulations (Aeroplanes).

1. Certificates for weight or passenger carrying will be delivered in respect of flights where each passenger carried must be at least 18 years of age and not less than 9 stone 6 lbs. in weight.

2. The carried weight shall comprise the weight of the aviator, passengers (if any) and ballast, but shall not include fuel.

3. The weight must be verified by an observer appointed by the club, immediately before and after the flight, and all weighing must be done on Government tested machines, provided by the competitor and approved by the Royal Aero Club.

4. The attempt shall be for a minimum flight of 15 minutes.

5. Entries must be made upon the entry form provided for the purpose, and must be accompanied by a cheque for £5 5s., the amount of the fee. The entry form must be duly filled up as specified for foregoing trials.

Should a further certificate be desired for speed with a given weight, vertical speed with a given weight, or height with a given weight, the regulations for the respective tests will be followed, in addition to the above, as far as applicable.

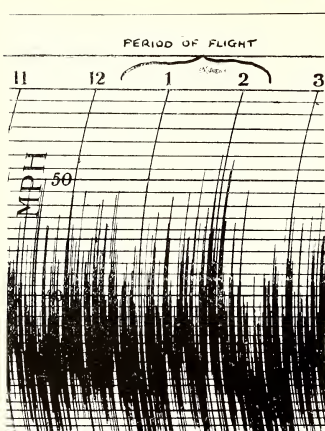
166, Piccadilly. Harold E. Perrin, Secretary.

The Latest Airship Scare.

Certain papers reported on Sunday that an airship of high power had flown over Dover into England in the early hours of Saturday morning. In response to numerous inquiries this paper states that it has no knowledge of such a journey, and there appears to be no reliable information on which to base a statement. It is this paper's policy to be particularly careful as to the publishing of news likely to create a popular scare. Such a flight may have occurred, in which case we should be glad of information.—W.

A New Weight Record.

In the last week of the old year M. Verschaeve, flying a Henry Farman biplane (80-h.p. Gnome engine) at the Job Aerodrome near Antwerp, carried four passengers (Lieuts. Moulin, Masui, Deschamps, and Demanet of the Belgian Army). The total weight carried was 385½ kilog. The duration of the flight was 37 minutes, 10 seconds.



A section of the wind chart at Brooklands during Mr. Verrier's historic flight with Lieut. Mapplebeck from Hendon.

Local Enthusiasm.

The following letter comes from Brierley Hill, Staffs:—"In this out-of-way place we have been making models and studying aviation since Farman flew the circular kilo. We have now started to build a full-size monoplane of 28 ft. span in a workshop 17 ft. by 10 ft. At the time of writing we have just finished the two planes of 13 ft. each. We have got them tuned up, and there is not 1-16th difference in any of the ribs, all being perfectly true. We have got to make the complete aeroplane in sections, so as to get it out of workshop. The fuselage has to be joined 4 feet from rear end and the landing chassis has to be made removable, also the wings. When we have got it out of the workshop we have to assemble it and push it along the road seven miles to the flying ground. We have designed it for a 30 h.p. engine and complete machine to weigh with pilot 600 lbs. I suppose we shall have to whistle for the engine or wait about two years before we can save enough to buy one second-hand.

"We have noticed lately a lot of talk about French enthusiasm about aviation. In last week's copy of your paper, in an article by a Brooklander, three old machines are mentioned, viz., the Avis, the Bat and the Anzani-Blériot, which were flown by the Hon. Alan Boyle and the late Mr. D. G. Gilmour. If these machines were altered they would make decent machines, instead of being left to rot. If it was only to the memory of that fine gentleman and aviator, Mr. Gilmour, they ought to be raked up. We have seen and read enough in your paper to think it would be his last wish that they should be given away or sold cheaply to those who would fetch them. We would come to Brooklands and push them all the way back and learn to fly them for his, Mr. Gilmour's, memory. If the French people have any more enthusiasm than this, they deserve the success that they have attained in aviation, for it wants some when you think that we shall have to work on the machine three or four hours every time we want a flight or glide.—W. Westwood and E. H. Dawes."

The Aviators' Christmas Eve.

[The following poem is published with due apologies to all concerned, especially to those who object to alleged humour in the wrong place.—Ed.]

Old England lies White 'neath a mantle of snow,
And to scare Christmas bogeys all Knight cocks Ducrocq;
The Verrier tingles with peace and goodwill,
And sounds of rejoicing are heard on Lark Hill.
A Singer chants Galy "Good Christians awake,
A Sippe of red Porte just for once I will take.
Sing Noel, sing Noel, I'll make it a noggin,
It keeps the fog out when you don't want the Foggin."

With Holyoake ivy the Hall is bedight,
The Barnes are all turned into hangars to-night,
Mr. Moorhouse looked out, just to see what was doin',
And cried to a comrade "Here, what are you d'Ewen?"
"Don't shout," he replied, "or I'll soon make you rue it,
You wanted a Yule log, so I went to Hewitt.
But I'm feeling so Slack, we shall soon have Morane,
So open the Gates, and I'll come in again."

"Shut up!" cried the others, "and don't look so bored,
The sleigh Bells are ringing, here comes Santa Claude.
Every moment we Longmore to see his round face,
What a time he has taken in Travers-ing space!"
Then with a vol-plané, most carefully planned,
The Saint reined in "Comet" and came safe to land,
Mr. Drexel exclaimed "sHucks! I've ne'er seen a wuss steed;
His box-kite's gone broke, so he's hired an old Busteed."

The boys in a Roe called out, "Welcome, Sir Tortoise!
You've come from a Farman, pray what have you brought us?"
Cried Santa, "'Tis jolly to see you all here.
My pack is well laden with gifts and good cheer.
Each one was remembered when starting my rounds,
And first, for brave Cody here's ten thousand pounds.
(Cheers.)
And here is some 'Tatcho' for Simms, I declare,
For, as we all know, it is good for the 'air.

"These packets of flower-seeds to Sutton shall go,
No doubt with their help Stocks and air-belles he'll grow.
This bonnie braw pibroch is for the McClean,
Tae summon the clans fra Glen Curtiss sae green.
Och shure, Desmond Arthur, Oi've something for thee,
Accept this foine Ulster, acushla machree.
Cornett Wilson, me darlint, phwat think ye o' that?
Och see the swate crathur—a Kilkenny cat!

"Now look you, Ap James, this will please you wateffer,
I've brought you a Welsh Harp from Henndonnyrreffer.
Tally ho! Sydney Pickles, take the fence with a rush,
And keep as a trophy this kangaroo's brush.
Albens, Vedrines, mon brave! accept s'il vous plait,
Rosbif and plompouddain, with café au lait.

To others he gave presents costly and rare,
And thought that he'd satisfied everyone there.
But one gallant airman was heard to repine,
For instead of a card, he'd a gay Valentine.
Then good Father Christmas reluctantly rose,
And placed his huge goggles astride of his nose;
Shook hands with his hosts and sprang into his sleigh,
With a cheery farewell as he went on his way.
This Maxim he left, ere he faded from sight:
"Keep Orvilly happy, and all will go Wright."

A. Nadin.

The Breathless American.

The following advertisement is taken from the pages of an American aeronautical journal. Its speed is unquestioned:—

"Wanted, an aviator with some experience, that can furnish a motor to help me fly my machine for an interest in my patents. I have a machine complete ready for the motor that will interest you, and it will cost you little to write me for cuts and descriptions of my invention, which is covered with patents, and then if you can't see anything into it, you needn't go any further, for if I can't convince any thinking man that I have the completest aeroplane that has been patented to date, I don't expect him to take any interest in it whatsoever; but if you feel that an interest in the best machine patented to date would interest you, write to——."

One thanks heaven for the taciturnity of British advertisers.

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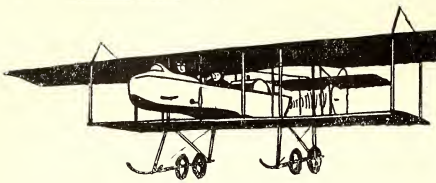
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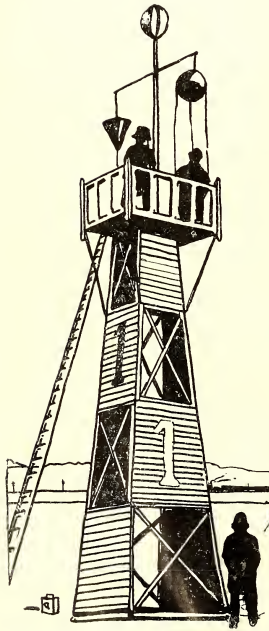
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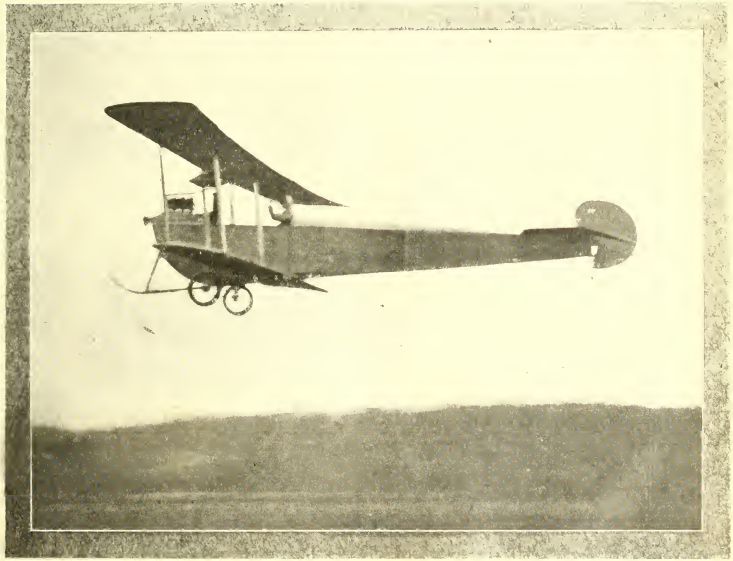
THE AEROPLANE

1d WEEKLY

Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, JANUARY 16, 1913. No. 3.

AN ALL-BRITISH BIPLANE.



The new All-British Flanders Biplane with 40-h.p. A.B.C. engine flying at Brooklands, with Mr. Raynham at the wheel.

Handley Page Monoplanes.

50 H.P. GNOME - £850

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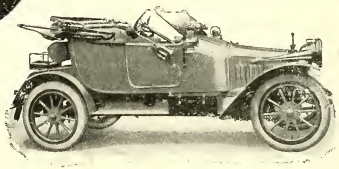
"Daily Telegraph," Monday, December 9th.

"Saturday was no exception to the rule. The day was a dismal one. Low-lying clouds, a thick mist, and withal a sharp gusty wind in the upper reaches, combined to make the conditions as unfavourable as possible. It was with some surprise, therefore, that we learned, shortly after noon, that the Handley Page monoplane, carrying a passenger in addition to the pilot, had started from Brooklands, where it had been flown the previous week, on its way to Hendon. The journey proved an adventurous one; in spite of the 20-mile wind, the ground was lost from sight in the mist immediately after the start. The monoplane rose to 400 feet, and was thereafter steered by compass. The only landmark seen during the flight was the spire of Harrow Church looming out of the fog. Even from the Welsh Harp, less than a mile away, the aerodrome was invisible, and it was only after circling for some time that the pilot managed to obtain a glimpse of the aerodrome and to effect a landing.

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"The record of the Handley Page monoplane during the last two months has been a remarkable one. It is designed on a principle that endows it with a large measure of automatic stability; accordingly, the machine has been flown in all weathers, irrespective of the strength of the wind, for the purpose of demonstrating its undoubted qualities in this respect."

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EDITORIAL AND ADVERTISING OFFICE—166, PICCADILLY. TELEPHONE—5407 MAYFAIR. TELEGRAMS—AILERON, LONDON.

Then and Now.

A contemporary whose views on the Government's policy have always been noted for their extreme moderation has recently committed itself to the statement that: "While it would be impossible to say that the Government attitude towards aviation is an entirely satisfactory one, it can at least be laid down that it is far better than it was a twelvemonth ago. Then we were not only hopelessly behind our rivals, but there seemed no prospect of things bettering themselves during the year to come. During 1912 something has at least been done, and although we have hardly commenced to make up the leeway, still the outlook is nothing like as disquieting as it was at the end of 1911."

Those who are closely in touch with the present position of affairs will scarcely feel able to agree with this dictum. As a matter of fact, our position now is nothing like as promising as it was a twelvemonth ago. In November, 1911, Colonel Seely, then Under-Secretary of State for War, made his famous announcement expressing the Government's faith in the future of aviation, and its intention to place our aerial defence force on a sound footing. Tentative specifications for aeroplanes entering the Military Competition had been issued, and everyone hoped that in the course of a few weeks definite rules would be published, so that aeroplane constructors in this country would have several months in which to build machines thoroughly fitted to show in that competition the capabilities of British constructors. In fact, then everything pointed to a great movement in military aviation during 1912. Consider, however, the actual position to-day.

On Thursday of last week Colonel Seely announced in the House of Commons that the Royal Flying Corps, Military Wing, then possessed twenty-nine aeroplanes, of which twenty-six were in flying order. Now be it noted that, with the usual official faculty for answering the letter of the question and evading the spirit, there is obviously included in those figures at least something over a dozen monoplanes which no one is permitted to fly, and on which none of the officers of the Royal Flying Corps have had any real practice, so that at the present moment the Military Wing possesses not much more than a dozen usable machines in flying order, of which none are sufficiently fast to be of practical use in war against a modern Power such as France or Germany. Colonel Seely stated at the same time that the Central Flying School owned twenty-six machines, of which nineteen were then in flying order, but it must be remembered that nearly all these are merely school machines, too slow for active service. Also, it is well to remember that of the machines belonging both to the Military Wing and to the Central School, which were at the time of that answer in flying order, a very high percentage are unfitted to take part in a campaign, because they are rapidly approaching a state of disintegration from continued hard use and inadequate attention.

This inadequacy of attention is not due to any carelessness on the part of the officers responsible for those machines, but simply because the pay of the Royal Flying Corps does not tempt the very best class of mechanic, except in a very few instances, and the few first-class mechanics in the Corps are so overworked that they cannot give the attention to the machines which is necessary. This state of affairs is practically certain to continue until such time as certain officers are trained purely as aeroplane engineers expressly to superintend the work done to the machines of the Flying Corps. It will then be possible for the work to be done by the class of man who is ordinarily enlisted as a mechanist in the Royal Engineers, a class which is fairly easy to obtain.

However, the point is that, after all the official talk at the end of 1911, we find ourselves at the beginning of 1913 without anything that can possibly by the wildest stretch of imagination be called an effective Flying Corps. In order that the statement that "the outlook is nothing like as disquieting as it was at the end of 1911" may be justified it is necessary that the prospects for 1913 should be better than the prospects for 1912; such, however, is not now the case. In the first place, there is no military competition with big prizes in prospect this year to encourage aeroplane constructors to experiment and improve their machines. There is not even an official statement to the effect that all machines up to a certain number passing certain specific tests will be bought, so that for practical purposes there is no encouragement to aeroplane constructors at all, and those who are spending money on experimenting and improving are doing so simply because they have faith in the future of aviation, and know that however obtuse and dilatory the authorities at present in power may be, there will come a time when we shall actually begin to make up leeway, provided, of course, the various Continental Powers are kind enough to leave us unconquered till then.

At the end of 1911 there were prospects of really excellent orders for aeroplanes for the Army, and yet at the beginning of 1913 Colonel Seely, in replying to Mr. Joynson Hicks' question as to how many aeroplanes have been ordered of the eighteen for which tenders had been invited up to the 19th of December, coolly replied that tenders have been received, the last on the 1st of January, and are under consideration; while he had the effrontery deliberately to ignore

the second part of the question asking why orders for further aeroplanes have been so much delayed. This is by no means as promising for the future as was the position twelve months ago, yet it is perfectly certain that the position must improve before very long, owing to the enormously rapid growth of public interest, as reflected in the daily Press.

It must be recollected that the daily papers of this country have far too much commercial sense ever to attempt to lead the opinion of their readers in any direction; they merely wait till public opinion, or party opinion, as the case may be, runs in one particular direction, and then they jump as hard as they can after it, with the result that when it is seen that, according to the Press, the British public are keenly interested in any particular subject, as, for example, the popularising of cinematograph theatres, it may be taken for granted the public interest in that particular thing is anything between six months and a year old. The natural result is, of course, that there is always a considerable "lag" when public interest begins to fall away, as is instanced by the enormous amount of space devoted by the papers during the summer to cricket news, and the small amount given to aviation, despite the fact that at least one aerodrome in this country could reckon solidly upon its 10,000 visitors every Saturday afternoon during the past summer, whereas gates at big cricket matches had grown woefully small. Of course, it may be that cricket is much more interesting to read about than to watch, whereas flying is more interesting to watch than to read about, and that, therefore, the daily papers are justified, but the ordinary intelligent observer cannot help being impressed by the fact that public interest in aviation is very keen, and that even the ordinary Englishman begins to sit up and take notice when the word "flying" is mentioned. At any ordinary middle-class social gathering the most modest and retiring individual becomes quite a centre of interest if it leaks out that he or she has actually flown, even if only as a passenger. Consequently, one may assume that the increase of public interest ultimately means business for those connected with aviation, and that to this extent the prospects for 1913 are considerably better than for those of 1912.

Still, the official attitude cannot be sufficiently condemned, and one can cordially endorse the views of the contemporary aforementioned when it says: "It is no exaggeration to say that at any time during the past three months we might have found ourselves suddenly at war with a first-class Power, and the danger is by no means past yet. To say that in the air we are ready for such an eventuality would be a simple piece of pure exaggeration. We are not ready by a very long way. We have neither the machines nor the trained pilots to man them if we had." Of course, The Aeroplane has been saying this at regular weekly intervals for the last twelve months at least, but there can be no harm in repeating it, especially when one finds another technical journal so thoroughly in agreement.—C. G. G.

The Daily Press and the Industry.

While on this subject of the awakening of the British public, and ultimately of the Press, to the importance of British aviation, the latest development of the situation is not without humour. One gathers that certain enterprising daily papers have discovered that there is to be an aero show at Olympia, commencing on February 14th. The guileless newspaper man, conjuring up visions of the Olympia motor shows, immediately assumes that there is business in the offing, and, in consequence, certain papers have already approached aeroplane manufacturers who are potential exhibitors at Olympia on the subject of advertising. When one considers the percentage of possible aviators among the readers of a daily paper with a circulation of some hundreds of thousands, and when one considers that the charges for advertisements in such papers are based on the supposition that a very high percentage of those hundreds of thousands are possible buyers of the article advertised, one begins to appreciate the knowledge of the people controlling those papers.

Nothing could be more pleasing to the technical Press than to see the demand for aeroplanes so great that advertising to the general public in the general Press could be a business proposition for an aeroplane constructor; but, unfortunately, that time is not yet, and, having a fairly intimate knowledge of the circumstances of most aeroplane firms, one can confidently assert that it takes most of them all their time to support with their advertisements the little group of technical papers which exist solely for the purpose of furthering the interests of aeronautics, and that, even supposing the average aeroplane firm had money to spare, it would scarcely feel inclined to hand over that money for the financial benefit of outside papers whose chief interest in aviation hitherto has been to impress on their readers the dangers of flying, with the result that quite a large number of men who would undoubtedly have taken to flying during the past two or three years have been prevented from doing so by the timorousness thus created in their progenitors, who would have to supply the necessary funds for them.

It is not so many years ago since a certain London paper was seized with the original idea of starting a violent anti-motor campaign, and then sending round its advertisement canvassers to solicit advertisements, their usual arguments being augmented by the subtle suggestion that the best way to remove public prejudice against motor cars was to advertise largely in its columns. Fortunately, the motor manufacturers of the period saw through the game fairly easily, and refused to be caught, with the result that after a period that same paper changed its tune, and is now a strong advocate of motoring.

Just about the same period another paper was seized with the idea of doing well out of its report of the Olympia Show, and placed the whole of its show report in the hands of an enterprising advertising agent, who worked on the simple principle of compounding a report of each firm's exhibits some weeks before the show, and then bargaining with each firm as to how much of the report was to be inserted in proportion to the advertisement placed in the special show issue. Those who hesitated as to whether they should advertise or not were bluntly told that no advertisement meant no report. It is quite possible that in due course the outside Press may attempt to operate in the same way on the aeroplane industry. To quote a metrical version of an ancient proverb:—

"Decortications of the golden grain
Are set to lure the ancient fowl in vain."—C. G. G.

The SOPWITH AVIATION Co.

BUILDERS of the Sopwith Biplanes and Hydro-Aeroplanes

HOLDERS of the British Duration Record

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HAVE NOW ESTABLISHED LARGE WORKS AT

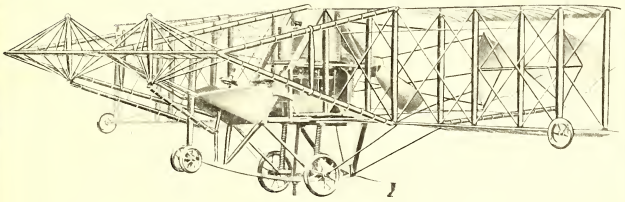
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How to Join the Royal Flying Corps.

BY W. E. de B. WHITTAKER.

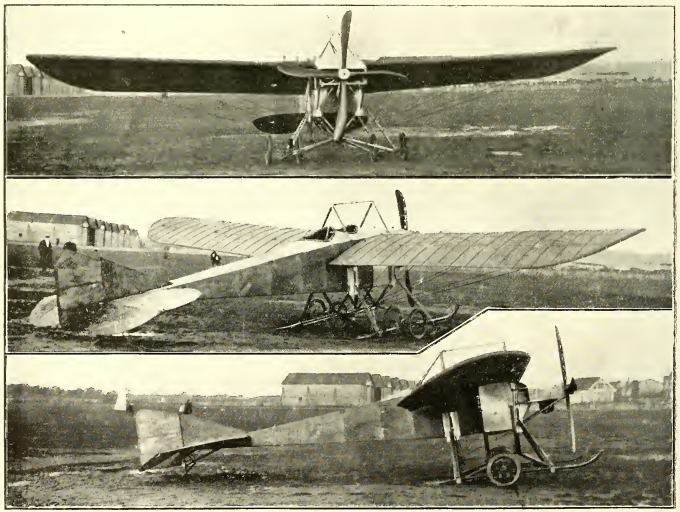
The birth of aviation has created a profession of an exceptional type. Its conditions have to some degree the glamour, and its great risks make it attractive to the unsophisticated young. In the beginning it held much promise of excessive reward for those who had the temperament to roll about in the upper air on a frail structure of wood and canvas, driven by an engine whose sole unvarying attribute was an engaging unreliability. The man in the street, whatever his public professions may be, has always been enthralled by the spectacle provided by accidents to human beings. Death, whether in the arena or the aerodrome, has given the salt to many a public holiday. It is a regrettable trait in human character, a probable survival of the days when the Pterodactyl flourished and life was a perpetual game of hide and seek. So for a space aviation and its disciples flourished.

Then after the first excitement faded and fatal accidents chose solitudes for their commission, and aerodrome flying reached a dead level of comparative safety, interest died, and people began to ask themselves the old question: "What is the use of it all?" No aerial liners have yet flown the Atlantic, and even a Channel crossing is not a thing of certainty. The inhabitants of Clapham are not yet able to visit their City offices by aerial bus. Aviation has not yet affected the Bank Holidays of the people, so, obviously, "What is the use of it all?"

When that which was a sport becomes a business the incomes derived from it fall in size, and the type of man engaged in it becomes more serious. Aviation has for a period become restricted in its application. Both scientists and those who are practical have come to realise that "Festina lente" is a desirable motto. The only practical use of the aeroplane at the present moment is as a weapon of war, and the only purchasers of flying machines worth considering are the Governments of States. There is little scope for the private employment of aviators, and, therefore, they too will find that the Government is the best employer.

Lack of commissioned officers in the Regular Army has opened the doors of the Royal Flying Corps to civilians. Certainty of employment and the nature of the life will attract many of the better class of aviator. One difficulty to some people is lack of information as to the best method of entering the Corps. To remedy this the War Office has published a leaflet entitled: "Short Guide to Obtaining a Commission in the Special Reserve of the Royal Flying Corps." The usual note appears on it pointing out that it does not supersede the regulations and is not to be quoted as an authority.

In this and the following article I will outline the general conditions, and, where necessary, add explanatory notes. The qualifications required in a candidate are as follows:—"A candidate must be of pure



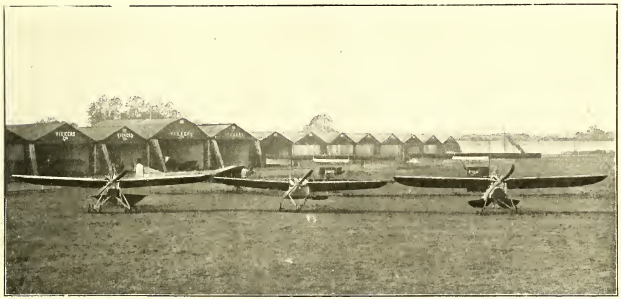
Three views of the new 100-h.p. Vickers monoplane at Brooklands.



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LEVASSEUR PROPELLERS



Prices of Trial Propellers upon application.

VICKERS Limited, Aviation Department,
VICKERS HOUSE,
BROADWAY, WESTMINSTER, S.W.

European descent and a British-born or naturalised British subject, and must fulfil these conditions :—

(i.) Be not less than seventeen years of age on the date of application [this despite the fact that if under eighteen a later condition (v.) cannot be observed.]

(ii.) Produce certificates as to his good moral character during the previous four years.

(iii.) Be physically fit for military service (*see* Regulations for the medical and physical examination of candidates for commission in the Special Reserve of Officers). The medical examination will usually take place at the military station nearest to the candidate's residence where a medical board can be held.

(iv.) Produce evidence of having attained a fair standard of education. This may be shown by :—

(*a*) A "leaving" or "qualifying" certificate obtained under the regulations for admission to the Royal Military Academy or the Royal Military College, dated 1909 [those who have been in the Army class of a public school will understand this, it does not usually apply to others], or

(*b*) Qualification at an Army entrance examination under the regulations for admission to the Royal Military Academy or the Royal Military College, dated 1912; or

(*c*) A certificate that he has passed the matriculation examination of a recognised university (or some other test which is accepted by the university as exempting therefrom); or failing any of the above,

(*d*) A statement from the head master of a secondary school or other competent educational authority as to the candidate's educational attainments.

(v.) Be in possession of the certificate of the Royal Aero Club. (To be obtained at his own expense). [This rule, it will be noticed, raises the age limit in (i)].

The above regulations should be read literally and the form of certificate should be that of the clause the candidate understands. The others obviously do not refer to him else he would follow their meaning.

After having decided to apply, a form of application (Army Form B 201) should be obtained from either—

The Commandant, Central Flying School, Upavon, Salisbury Plain,

The Officer Commanding Military Wing, Royal Flying Corps, South Farnborough, Hants; or

The Secretary, War Office, London, S.W.

On the form will be found the address to which it is to be forwarded.

As is well known, the liability is to serve for a period of four years, on the expiry of which if the officer's conduct is in every way satisfactory his service may be extended year by year. Though no official statement can be made, it is probable that all efficient officers will obtain an extension of service if they so desire. To those who desire to make the Army their profession for life the following two paragraphs will be of interest :—

5. . . . An officer may compete for a commission in the Regular Army under conditions similar to those laid down for officers of other branches in the "Regulations under which commissions in the Regular Army may be obtained by officers of the Special Reserve of Officers," etc. [These regulations principally refer to such details as age limits, etc.]

6. . . . When called out for active service at a time of national emergency, officers of the Special Reserve of Officers, Royal Flying Corps, will be eligible under certain conditions to be appointed to commissions in the Regular Army.

All candidates must state whether they "desire to be posted to a unit of the Military Wing for continuous service, or to the Reserve of the Royal Flying Corps. Appointment to a unit for continuous service will depend upon the satisfactory completion of his probationary training and the existence of a vacancy." If no vacancy exists presumably the candidate, if desirous of so being, will be posted to the Reserve.

An officer will be appointed to the Special Reserve on probation with the rank of second lieutenant. He is then sent to the Central Flying School, "the length of the course of instruction" at which "will depend upon whether the officer is already an expert flier before joining the school, but in any case will not exceed four months."

At the expiry of the course he is reported on by the commandant, and if considered efficient he is confirmed in his rank.

(*To be continued.*)

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette" of January 8th. War Office :—

REGULAR FORCES.

Royal Flying Corps, Military Wing.—Capt. Tom I. Webb-Bowen, Bedfordshire Regt., to be a Flight Commander, and to be seconded; December 5th, 1912. Lieut. Alexander E. Burchardt-Ashton, 4th (Royal Irish) Dragoon Guards, to be a Flying Officer, and to be seconded; December 5th, 1912.

Admiralty appointments, January 9th :—

ROYAL MARINES.

Capt. R. Gordon, R.M.L.I., has been granted the temporary rank of Major while holding the appointment of Squadron Commander in the Royal Flying Corps, to date December 31st.

Captains—C. E. Risk, R.M.L.I., has been graded as Flying Officer, Naval Wing, Royal Flying Corps, to date December 5th.

Lieutenants—G. V. Wildman-Lushington, R.M.A., and J. T. Courtney, R.M.L.I., graded as Flying Officers, Naval Wing, to date December 5th.

On January 13th one of the Breguet biplanes attached to a Farnborough squadron, R.F.C., caught fire and was totally destroyed. The officer pilot had just given the let-go signal when the engine fired back into the carburettor and the fuselage took fire. The ground is a more appropriate scene for such a conflagration than is the upper atmosphere.

Commander Samson, R.N. (C.O. Naval Wing); Lieut. Spencer Grey, R.N.; Assistant-Paymaster Berne, R.N.; and Capt. Risk, R.M.L.I., flew on four biplanes from Eastchurch to Dover in a high wind on January 13th.

FRANCE.

The Algerian escadrille continues its activities. The 220-kilometre journey from Biskra to Touggourt has been made several times with a passenger, and without an intermediate descent, on a Henry Farman biplane (80-h.p. Gnome) by Lieut.-Aviator Reimbert. Lieutenant-Aviator Cheutin attempted to repeat his journey of a week ago, but was brought down half-way by motor trouble.

The aviation centre at Toul was inspected on January 5th by General Goetschy (G.O.C. 20th Army Corps). During the inspection the dirigible balloon "Adjudant-Vincenot" made an ascent and two aeroplanes flew for some time.

The two Officer-Aviators Perretti and Feierstein, of the Moroccan aviation section, flew over the Taguidert Valley during the morning and in the afternoon of January 2nd and signalled the discovery of a force of rebels lying concealed in the glades about a mile and a half from the Palmeraie camp.

On January 6th, at Buc, two Borel monoplanes were taken through the military reception tests by Ducourt. Each machine rose to a height of 1,600 feet with a useful load of 330 lbs. in four and a half minutes. Both monoplanes were accepted for the army.

Captain-Aviator Clavenad, who was dismissed from his command in Morocco owing to a too free pen, has now been reinstated as an officer-aviator. The following order reached Verdun, where his regiment is stationed, on January 4th: "The Ministry of War has decided to reinstate Captain Clavenad in the personnel of the aviation service. This officer is to be at Etampes, if possible, on January 10th at the latest, and will proceed with his training on a Blériot monoplane. He will rejoin the Reims centre as soon as possible, where he will take command of the second group of Reims, with the duty of organising the Mézières centre, of which he will be made commandant."

On January 4th M. Charles Nieuport made several flights

The Aircraft Co., Ltd.

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HENRY & MAURICE FARMAN

Aeroplanes
AND
Hydro-Aeroplanes.

The Maurice Farman classed 3rd in order of merit in the Military Trials was an ordinary standard machine from stock.

Works and Flying Ground :
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Offices :
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If you want to Fly Safely learn on a DEP.

The Fastest Monoplane in the World.
Winner of The Gordon Bennett Cup.
Holder of World's Speed Record.
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on a Nieuport hydro-monoplane supplied some time ago to the navy. He made one flight of over an hour above the Frejus Gulf. The average speed maintained was 55 miles an hour, and the average height 800 feet.

M. Moineau, the Bréguet pilot and sergeant in the Aeronautic Reserve, received the Cross of the Legion of Honour from the G.O.C. 20th Corps on the occasion of a review of the Nancy garrison which took place on January 9th.

GERMANY.

The military aerodromes at Koenigsberg and Posen will be opened on February 15th. Each hangar will be large enough to hold two aeroplanes, two motor-wagons, and three two-seated motor-cars. Two officer-aviators from Doeberitz will be attached to each aerodrome for instructional purposes.

Firing practice is to be made shortly from the nacelle of the Zeppelin dirigible "Hansa" while flying at a height of 2,600 feet.

A German newspaper is greatly excited by certain dangers threatening military dirigibles in times of peace. For instance, at Johannisthal the hangar in which the naval Zeppelin is placed is within a few feet of the public road. No adequate guard is mounted, and strangers are allowed to wander about as they please. A small bomb would place both dirigible and hangar out of action in a few minutes. An alteration of system is demanded.

The new Zeppelin on order for the Saxon army is to be delivered in February.

The dirigible Z.II at Cologne, the Z.III at Metz, and the Parseval (replacing P.II) at Biebrfeld are to undergo six weeks' practice (from the present date) in working with troops. The practices will take place at the respective bases of each dirigible in order to avoid a long journey by air.

Two officer-aviators, Markgraf and Muller, fell near Lindental on January 4th and were seriously injured.

Barracks are in course of erection at Doeberitz to accommodate the officers and men of the aviation corps. Quarters for thirty-two officers are to be provided.

On January 6th Admiral von Tirpitz, Minister of Marine, visited the Johannisthal aerodrome and made a close inspection of the dirigibles and of the naval barracks. At 9.40 a.m. he made an ascent on the dirigible (Zeppelin) L.1, remaining in the air for about an hour.

Nine square kilometres of land has been purchased at Cuxhaven by the Ministry of Marine. This land is to be formed into an aerodrome for the naval aviation corps. A double hangar (collapsible) for Zeppelins is in course of erection. The aviation section will consist of five officers, 81 N.C.O.'s, and 113 men. For administrative purposes this corps will be under the Inspector of Coast Artillery.

The Ministry of War is about to place an order for three Zeppelin dirigibles. Another will be ordered later in the year.

The military aerodrome (with dirigible sheds) in course of formation at Leipzig will be opened on June 15th.—W.

On June 15th the Leipsic airship hangar and military aviation station will be opened officially. The subscriptions to this end have reached a sum of a million and a quarter marks (£62,500), and another 70,000 marks (£3,500) have been promised. It is believed that various German factories will start depots at Leipsic, whilst a number of military men will be sent to the Saxon town for instruction. An officers' pavilion is to be erected on the grounds.

The new Zeppelin airship No. 15, intended for the German War Office, will be completed in the course of the present month and be taken to Baden, where it will be re-christened "Z.4," in accordance with the running numbers of the military Zeppelins. No. 16, now well started in its construction, is destined for the naval station at Hamburg.—B.

AUSTRIA.

The Paulhan-Curtiss hydro-biplane (flying-boat type) ordered by the Ministry of Marine passed its reception tests at Bézons on January 1st, and has been dispatched to Pola, on the Adriatic.

Four Donnet-Lévêque hydro-biplanes have been delivered recently to the navy. On January 10th the four, piloted by Lieutenants Klobuchar, Woffeneck, Renfield, and Ingfried, two of them with passengers, left Pola, on the Adriatic, for Fiume, a distance of 130 kilometres, which they covered safely.—W.

SWITZERLAND.

Lieutenant-Colonel Borel has arranged to give a series of lectures in the larger towns in favour of a national subscription for aeroplanes to be used in the army.—W.

ITALY.

The national subscription for the purchase of military aeroplanes has reached a total of £792,000.

The Government have decided to prepare an extensive dirigible programme.

An Italian military commission visited the Borel works at Neuilly and carefully examined the methods of construction employed in the Borel hydro-monoplane, several of which type have been purchased for the Italian navy.

By order of the Ministry of War the entire military aeronautical service is to be centralised at Turin. The aviation battalion will be quartered in the La Marmora barracks. Previously, the service has been divided between the Mirafieri, San Maurizio, and La Venaria camps. Dirigible repair shops are to be erected in the vicinity of Turin.

A school of pilot-aviators destined to military aviation opened on January 1st and is in three sections: (1) Theoretical instruction at Turin of three months; (2) practical course in aviation in the military aviation schools, after which the candidate is called a "pupil-pilot"; (3) practical course with the escadrilles, after which the "pupil-pilot" becomes "pilot-aviator." The two last courses occupy about twelve months. Fifty officers will be entered for the first course, the number being reduced to 35 by the last course.—W.



Mr. Pixton in Italy. Left to right—Messrs. Colley and Mackintosh, (mechanists), Mr. Pixton and Mrs. Pixton with the new 80-h.p. Bristol.

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BELGIUM.

The Belgian army has now 24 Henry Farman biplanes (mostly Belgian built) in its possession. Eight of these are at Liége, eight at Namur, and eight at Brasschaet. Each of these centres has a staff of 30 aviators and mechanics.

Six officers have been attached to the aerodromes at Brasschaet and Saint Job-in-'t-Goor for training purposes.

Lieutenant-Aviator Franquet, 4th Regiment of the Line, recently attached to the aviation section at Brasschaet, is to leave for the Congo, after completing his flying training, that he may form an aviation section in the colony.

FOREIGN NOTES.

France.

M. Vedrines is now practising at Etampes on a Deperdussin monocoque that he may set up new figures for the speed records from 350-600 kilometres. On January 9th he covered 300 kilometres (186 miles) at an average speed of 82.5 miles an hour.

M. Bielovucic is now at Brigue, from whence he intends to fly on an Hanriot monoplane to Domodossola over the same route traversed by Chavez in his famous last flight. One hopes that better success will attend his efforts.

The Farman biplane again makes its entrance into the world of records. On January 10 at 3 o'clock in the afternoon M. Chevillard left ground at Buc on a Henry Farman biplane (80-h.p. Gnome) with three passengers on board. He rose in half an hour to a height of 1,500 metres (4,920 ft.), beating the former record (held by a German) by 1,240 ft.

A Blériot hydro-monoplane (80-h.p. Gnome) was flown over the Seine at Bézons by Perreyon and with great success. This machine is a two-seater with a completely covered fuselage.

It is understood that M. Garros and his friend M. Barrier leave for Mexico at the end of the month. They intend to carry out an aviation tour of two months in duration.

M. Gollien has taken his Curtiss hydro-biplane to Cannes from Juan-les-Pins by way of the air. He intends to remain in Cannes throughout the season. M. Audemars has also arrived in Monaco from Paris.

A hydro-aeroplane service is to be maintained between Nice and Cannes. The alighting places will be in front of the Casino at Cannes and on the California Aerodrome at Nice. The price of the journey both ways will be between 200 and 250 francs.

The Comte de Lambert, one of the earliest Wright pilots, is now flying a hydro-aeroplane at Triel. On one recent morning he gave flights to seven passengers in succession.

M. Duval, the well-known Canadian pilot, has lately made several flights on a Deperdussin monoplane (50-h.p. Gnome) at Reims.

On January 7, Mr. James Valentine, with Miss Trehawke-Davis as passenger on a 70-h.p. Gnome Blériot monoplane, flew in a thick mist, and as dusk was falling, from Buc to Issy-les-Moulineaux, passing over Versailles at a very low altitude.

M. Helen has gone to Montpellier taking with him a Nieuport monoplane. He proposes to make a long aerial tour through Spain and Algiers, touching at Perpignan, Barcelona, Tortosa, Valencia, Alicante, Carthagena, Almeira, Malaga, Tetuan, Mahila, Oran and Algiers.

A few days ago M. Robert Esnault-Pelterie wrote to the editor of "L'Aéro" stating that he had made no definite decision as to whether he will retire from aviation or not. Therefore the notice of his having retired from the aeroplane business is at least premature.

Some months ago M. Maurice Farman successfully defended an action taken against him by various landed proprietors in the neighbourhood of Buc for the damage done to stock and standing crops by aviators flying over the land. Now another action has been entered against the Farman Brothers by a local landlord; on the contention that the air above one's land is one's property. The counsel employed by the defendants argues that a new evolution requires new legislation.

The Savary hydro-biplane made its first appearance in public on January 4, when it was flown above the Seine at Juvisy.—W.

Germany.

Germany's lengthy aviatic programme for 1913 is to be further enriched by an interesting international race leading from Berlin to Denmark, Norway and Sweden. Delegates from the four countries concerned met at Copenhagen on December 30th to arrange all preliminaries. The flight is to commence in June. Other important events are the Upper Rhenian Circuit, a Mid-German and a North-West German Circuit, a north to south flight leading from the North Sea or the Baltic to Munich, the two national weeks at Johannisthal, and the "Round about Berlin" contest. A number of minor competitions and weeks complete the programme for the German season, but these undoubtedly will suffer the usual alterations and abbreviations.

Bruno Werntgen, the juvenile German aviator, has now started the construction of his aeroplanes on a larger scale. Werntgen, who, although barely twenty years of age, received his brevet in 1910, has interested a syndicate of influential people in his machines, with the result that a limited company, with headquarters at Bonn, has been called into being.

The Upper Rhenian Circuit will be held for the third time in succession from May 10th to 19th next year, starting from Wiesbaden and finishing at Constance, with a military scouting test on the Strasburg to Constance stage, and a series of hydro-aeroplane trials on Lake Constance. H.R.H. Prince Henry of Prussia is once more at the head of the working executive.

Helmuth Hirth has now taken out his brevet as a biplane pilot, after joining the Albatros Works. This is a departure from the ordinary, as aviators generally turn from the biplane to the monoplane, and not vice versa. Hirth intends building Albatros monoplanes very shortly.

In a very well attended meeting at Berlin, the German Aerial League decided to push on the work of erecting "refuge stations" for aviators throughout Germany, analogous to the huts in mountainous regions. These stations would offer stranded aviators shelter and food and would be equipped with tools for a first repair. The advance list contains 18 of such erections, scattered throughout the Empire.

The question of forming a Colonial aviation service is only a matter of a very short time, according to the statements made by the German Colonial Minister, Dr. Solf. The Colonial Office already has all the necessary plans cut and dried, and has demanded a certain sum for the purchase of aeroplanes which are to be used for the conveyance of orders in times of tribal disturbances, for a postal service in trackless districts, and, above all, for land surveying. Great stress is laid on the latter point.

Arthur Faller, who recently set up a new world's duration record of 1 hour 18 mins. for four passengers, took up five persons at Mulhouse-Habsheim on January 3rd, on his Aviatik biplane with a 100-h.p. Argus motor. He remained aloft for 1 hour 6 mins. 5 secs., thereby creating a German record. Molla still holds the world's best performance for an achievement of this class with a flight of 30 secs. longer. Three days later Faller repeated his performance, this time, however, taking up seven persons and flying for 6 mins. 49 secs. As the world's record list hitherto has no statistics of a flight with eight people in all, Faller's achievement may be regarded as such. The full load carried by the biplane amounted to 532 kilogrammes.

December was a busy month in Berlin-Johannisthal, as ascents were made on twenty-three days by sixty-one fully fledged pilots and nine pupils. Hartmann (Wright) heads the list with 79 ascents totalling 11 hours 4 mins. Among the men who took out brevets were Hirth, for the biplane, Beck, Colombo, Erhardt, Koenig, Reichelt, and Lieutenant von Skrbensky. Ninety-eight aviators passed their examinations at Johannisthal during 1912.—B.

There is some talk in Germany of forming a bureau of a "Minister for Aerial Affairs." Subordinate to the Minister for Home Affairs, his duty would lie in the regulation of all matters appertaining to aerial navigation.

An important hydro-aeroplane meeting will take place on the German shores of the Baltic during July, under the control of the Imperial Aero Club, the Imperial Automobile Club, and the Association of German Aviators.—W.

Austria.

Certain regulations controlling the flight of aeroplanes have been issued by the Austrian authorities. Some districts are closed to the civilian aviator. If he flies over such districts by error he is to land at the nearest possible place and report to the police. It is forbidden to carry explosives, weapons, or carrier pigeons on aeroplanes. Cameras can only be carried by special permission. Any infringement of the regulations will be rigorously punished.

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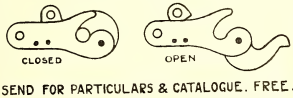
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Spain.

A number of Spanish capitalists have combined and intend to form an aerodrome in the neighbourhood of Madrid, comprising an aviation school and large repair shops. The school will be under the control of four Spanish engineers, who have taken their certificates as aviators. Five aeroplanes are to be purchased. The school will give practical and theoretic lessons and the course will be free to workers.

Denmark.

The "flight in four nations" is now taking on a more concise shape. At the Copenhagen Conference a route of 1,000 kilometres was broached, leading from Berlin or Hamberg via Copenhagen and Stockholm to Christiania, where the event will end. It may be noted that the contest is open to aviators of all nationalities.—B.

Italy.

Signorina Rosina Ferrario, of Milan, is the first woman to take out a brevet in Italy; she was taught at the Vizzola aviation school.

Belgian Congo.

M. Lescart is now flying a Henry Farman biplane in the Belgian Congo. The aeroplane is to be employed for commercial purposes in the Colony.

Argentina.

Mr. C. K. Tindall writes from Buenos Aires:—"On Sunday, December 15th, Engineer Newberry, flying from the El Palomar aerodrome made an attempt to recover his altitude record. On reaching 2,400 metres (about 8,000 ft.), he had the misfortune to break one of the glasses of his goggles. The pain caused by the rush of air through the aperture was so intense that he was obliged to come down.

"Herr Heinrich Lübbe, a German aviator, has recently arrived in Buenos Aires, where he will fly a Taubé (the Rumpler 'Dove') monoplane, Argus 4-cylinder, 100-h.p. engine. Several flights of short duration were effected by him at the Military aerodrome on the 18th instant. This monoplane, built entirely in Berlin, is supposed to be a scientific reproduction of a pigeon. It weighs 900 kilos (about 2,000 lbs.) in working order, and is a military two-seater.

"The Buenos Aires Jockey Club have decided to donate to the Argentine Military Aero Corps a Maurice Farman and a Bréguet, each with 70-h.p. Renault engines."

The First Scottish Military Station.

One learns that the first of the Military aviation stations to be established at any considerable distance from headquarters is to be opened during the next few days at Montrose in Scotland. This will presumably be the chief military aviation station in Northern Britain, and situated as it is on a comparatively flat coast almost midway between Dundee and Aberdeen, it should be an excellent point for patrolling that portion of the east coast. The second squadron of the Military Wing of the Royal Flying Corps is to be stationed there, and it is very probable that a Naval station will be formed at the same place.

If the two stations are to be combined some interesting problems of Service precedence are likely to arise owing to the temporary rank of Army officers possibly making them academically senior to Naval officers who are not only their senior in rank but are actually their seniors in the Royal Flying Corps. However, it is hoped that no serious friction will arise between the Services.

The R.A.F. "Warplane."

On Thursday and Friday last the new biplane, mentioned recently in this paper, was to be seen in the early morning on Farnborough Common in front of the Royal Aircraft Factory. Inquiries proved it to be the new "warplane" built and designed by the experimental staff of the Factory. In appearance it looks decidedly peculiar. It has the well-known "B.E." type of staggered planes. On the lower one is mounted the short, blunt-nosed body or "nacelle" which contains the engine, a water-cooled Chenu, mounted in the front, the radiator being curled round the nose of the cover. A transmission shaft from the engine to the rear of the "nacelle" drives the four-bladed propeller, which is just behind the pilot's seat. The propeller is mounted on one of the gear shafts and the tail is a boom fitted from the propeller boss and guyed in place by bracing wires. This boom carries the "empennage," elevators and rudder. So far only rolling has been indulged in by the pilot, Mr. de Havilland.

Questions in the House

Written Answers.—January 9th, 1913.

Royal Flying Corps.

Mr. Joynson-Hicks asked the Secretary of State for War how many aeroplanes have been ordered of the eighteen for which tenders had been invited on December 19th; and why orders for further Aeroplanes have been so much delayed?

Colonel Seely: Tenders have been received, the last on January 1st, and are under consideration.

Mr. Joynson-Hicks asked the Secretary of State for War whether he is aware that over 400 aeroplanes were bought by the French Army during the past year in addition to the 218 possessed by the French Army at the end of 1911; how many aeroplanes the Royal Flying Corps possesses belonging to the Military Wing, and how many at the Central Flying School; how many of these are actually in flying order; and how many of them are capable of exceeding a speed of sixty-five miles per hour in calm air—i.e., without the assistance of wind?

Colonel Seely: There is no information at the War Office to show the number of aeroplanes bought by the French Army during the past year. The Royal Flying Corps, Military Wing, possesses 29 aeroplanes and the Central Flying School 26; of these 26 and 19, respectively, are in flying order. With regard to the last part of the question, I do not think it is desirable to make public the qualities in speed or otherwise of our aeroplanes for use in war.

A New Mortimer Singer Prize.

The Royal Aero Club has received from Mr. A. Mortimer Singer a letter containing the offer of a prize of £500 to be won in competition by the entrant of an aeroplane which is capable of rising and alighting on both land and water. The question of the conditions which shall govern the award will be discussed by the club at its next meeting.

Such prizes as those given by Mr. Mortimer Singer, to be competed for under a series of judicious rules, have a good influence on the progress of the science of aviation, and one could wish more men with money had equal public spirit.

British Empire Michelin Prizes.

At the Royal Aero Club on Tuesday of last week, Sir C. D. Rose, Bart., M.P., presented Mr. S. F. Cody with a cheque for £600, being the prize awarded to him in connection with the British Empire Michelin Competition No. 2. A cheque for £500 was presented to Mr. H. G. Hawker, being the prize awarded to him in connection with the British Empire Michelin Competiton No. 1. At the close of the presentation a hearty vote of thanks was passed to the Michelin Tyre Co., Ltd., for their generous prizes which have given so much encouragement to the industry in this country.

Gordon-Bennett Aviation Cup.

The cup having been won by a representative of the Aero Club de France, the race for 1913 will take place in France. The exact time and place will be announced later.

The nature of the contest will be decided at the meeting of the Fédération Aéronautique Internationale, to be held in Paris on January 28th, 1913, at which the Royal Aero Club will be represented.

Each club affiliated to the Fédération Aéronautique Internationale has the right to challenge the holder, the Aero Club de France, and such challenge must be sent in before March 1st, 1913.

The committee of the Royal Aero Club will select the three competitors to represent the British Empire, and intending candidates are requested to notify the secretary on or before February 25th, 1913, of their willingness to compete, if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the entrant not be selected.

An Error in Design.

Authentic news from Paris states that the first French rigid dirigible, the Spiess, has had to be altered owing apparently to an error in the designers' calculations. When the balloons were inflated ready for her trials, it was found that they could not lift the weight of the machine, which was out of proportion to the gas capacity. Two more gas compartments are now to be added which will make the machine considerably longer, and it cannot possibly be out again for another six months. It is, at any rate, some consolation to know that other people make mistakes with their dirigibles as well as ourselves.

Personal Experiences of Certain Aeroplanes.

BY THE LATE LIEUTENANT WILFRED PARKE, R.N.

(Some months ago, when at Eastchurch, my friend Wilfred Parke showed me a large book, labelled on the cover "Aviaticanda," and explained to me that in his leisure moments he was writing therein his personal opinions of various machines which he had flown. The contents were to be strictly private while he lived, but he showed me his prefatory note, and he said that if he should be killed while flying he hoped a record of his experiences might be useful, and that I might think some of the matters referred to in the book worth publishing. He left instructions that, in the event of his death, the book was to be sealed and sent to his brother Charles.

Last week Mr. Charles Parke brought the book to London and permitted Mr. A. E. Berriman, the technical editor of "Flight," and me to read the book through in detail. The duty was a sad one, for we all had hoped that Wilfred Parke might be spared to take that high place in his country's service for which his natural ability was evidently preparing him. But it was not to be. However, his determination to be useful after death has succeeded, and it is our pity that he had no time to have given his experiences of the particular Avro and Short biplanes of which he has spoken appreciatively to me.

Mr. Berriman agreed with me that certain passages in the book dealing with personal matters should not be published, and, acting on that agreement, I am now privileged to give the following verbatim copy of all the practical points he mentions. These cannot fail to be of the greatest interest, for few pilots have had so much experience of various machines, or have thought out so assiduously the causes of the behaviour of certain types as did Wilfred Parke, R.N.)

Notes on Cody's "Circuit" Biplane (Sep. 30/12).

I flew this in November, 1911, then fitted with a Green engine (60-80 auxiliary ports). It is a delightful machine to pilot, and easy, the control, though unconventional, being very suitable for the machine. The great point about the control is that the column is continued above the wheel and grasped with the left hand, which does all the banking, the right hand being placed on the wheel only when required to steer, the warp and rudder being interconnected with the warp very low geared, and rudder balanced and high geared; the amount of power required from the pilot is small. On the other hand, the gear between rudder and wheel is very low, making the machine a little awkward to steer on the ground, as it takes some appreciable time to get the rudder over.

One disadvantage of using so much rudder to preserve lateral balance is that, if you try and land using the engine, the movement of the control to correct the torque may be rather a disturbing effect on "direction," which is a nuisance near the ground; it is easier to land *en vol plané*. Though easy to control, she wants just watching all the time for lateral balance, probably due to the inverted dihedral; you keep on just slightly working all the time, but very slight; fore and aft she more or less looks after herself.

When I smashed her I had a big load up, turned down wind whilst forcing her to climb; she lost speed, started to rock, and finally side-slipped when about 30 feet up; directly she sideslipped her big rudder area put her right down, and I started to pull her up with the elevator; another 15 feet and the smash could have been saved, and she was starting to answer quickly; unfortunately, the small front wheels actually hit in a ditch and brought her up all standing, with considerable damage; I was shot out head over heels, quite unhurt, as my helmet showed marks of having saved me from some nasty cuts by wires; my passenger was more or less jammed in his seat and also unhurt. I had previously flown this machine solo from Farnborough to Brooklands and back, landing at Brooklands, and made a *vol plané* with engine completely stopped from over 2,000 feet. Note that she glided very almost dead balanced in normal flight; if going faster (as *vol piqué*) it pushed the control back, and if climbing her too much pulled the control forward; I don't think the elevator carried much load with the Green, and doubt that it does with the Austro-Daimler.

Handley Page Monoplane (Oct. 20/12).

For a start, there is no doubt that this "bus is of a really fine and extremely promising design; whilst not quite so efficient as, say, an Avro (W.O. type), it does not do at all badly; it flies at, as far as I can judge, just under 55 m.p.h. with a probably unsuitable propeller (Blériot-Chauvière Circuit de l'Est type). Extra weight makes practically no difference; indeed, she gave no sign of being overloaded with two kids, totalling 16 stones, in the passenger seat; she is certainly a bit slow at getting off the ground, and I do not make her climb fast, but the latter has probably got something to do with me, as her ordinary gentle rocking motion probably makes me think I have got her *cabré* when really she is going up perfectly all right—i.e., she would climb faster is she were made to.

Now, as regards her inherent stability, her lateral stability is as near perfect as I can imagine; she just simply floats about quietly, quite regardless of *remous*, propeller draughts, etc.; you can feel them hit her, and her consequent "automaticing," but it does not worry her at all. As regards banking, she takes up her own angle quite naturally; she appears to be moving on an approximately uniform path after turning the first 135 degrees (about), and for trial purposes I have frequently extended the turns to over 360 degrees; this makes no difference whatever to her; she simply continues as sweetly as possible, everything remaining unchanged, including the pressure on the rudder, which, though very light (a possibility of observer's error, therefore), appears to always remain on the inside—i.e., when turning to the *left* with uniform angularity, the pressure is always on the *left* foot, though the force is less than whilst accelerating.

To bring her off a turn I used, at first, to use the warp at the same time as I ruddered, but have since found this unnecessary, as she comes up quick of her own accord. For trial purposes I have reversed the rudder from half-left to half-right and watched her swing over and pick up her bank on the reversed curve without needing a touch of the warp. With reference to this, it is interesting to note that, after straightening out after a sharp turn, she will "hunt" laterally for a short time to pick up her normal lateral attitude. I noticed this particularly once when shutting off to *vol plané* rather low from a sharp turn, when this hunting gave me quite a lot of work to do with the warp to make her take the ground on an even keel; it probably would not matter a bit touching one wheel a good deal first (with the excellent type of undercarriage fitted), but looks bad. Natural control—she has any amount of it, though the warping wheel is rather low geared to my mind: she is quite reasonably quick on the warp. Longitudinal stability—I have so far been unable to determine accurately whether there is any serious improvement here over other decently designed machines on standard lines; longitudinal control is usually so easy that one would not notice this much; it should be tested by having some means of holding the elevator control fixed, which is not possible by hand alone. I think she must have something subtle in her longitudinal arrangement, as, in spite of the passenger's seat being right back in rear, the difference between 16 stones and 6 stones makes no appreciable difference to balance or control in the air.

She answers her elevator well, but gives the impression of having that control rather low geared too; possibly that impression is helped by somewhat increased moment of inertia due to passenger's position; anyway, I very noticeably use more motion of the control column to land than I am accustomed to do on other machines.

She has a very good gliding angle, about the same as the Avros (say 1 in 6.5) and is consequently very easy to land in an aerodrome, particularly as her undercarriage is very "squashy" and with no tendency to bounce. I believe its springs are worn out. She runs rather a long way, as the tail skid keeps her tail rather high.

Her rudder has a good aspect ratio, and though unbalanced, its control is very light; I only rest my toes on the bar. The seating accommodation is most excellent, far better than is usually found; both pilot and passenger get excellent protection from the wind, except just their heads.

In conclusion, she really flies, and for pure pleasure of flying it is miles ahead of anything else I have ever been in as pilot or passenger. She is, to my mind, an extremely safe and excellent machine.

Caudron Biplane—35-h.p. Anzani.

My experience of this machine up to date has been gained on the machine belonging to Percival (Aero Construction Co.). I flew her for some trial flights, and then in a couple of small races at Brooklands, one cross-country and the other round pylons (this was the only pylon race I have ever flown in; I do not care much about them, thinking them unnecessarily dangerous owing to the danger of machines passing each other rather close when rounding a pylon).

What has chiefly impressed me about this little machine is its extreme steadiness in the air, especially when considered in relation to its small span and light weight. It appeared to have quite a high degree of inherent stability, probably due to its flexible surfaces, though actually I did not test this systematically, being at that time too fond of correcting the smallest deviations. The machine is rather heavy on its lateral and longitudinal controls, and would, in my opinion, be very much improved by the substitution of a wheel control for the standard universal lever. It is a very easy machine to fly on account of its steadiness and ample control, which it answers very well. For pupils, I am inclined to think that the rather heavy controls are an advantage rather than otherwise.

One thing I noticed was that I tended to land much more "tail-high" than usual, from which I deduce that she has not got a very good gliding angle. Also, one has the impression that one is coming down much more steeply (*en vol plané*) than one really is. Left alone when turning sharply, she takes up a very nice bank, but I have no reason to fear her overbanking herself; in turning sharply either way she has a strong tendency to dive, which can be checked by the elevator; I attribute this to her sharp bank making the rudder act partly to raise her tail, especially as the pressure remains fairly high on the *inside* of the rudder. At any rate, this up to 180 degree turns; more than that I did not try. There was a good deal of vibration from the engine, not surprising the Gnome-type of oil indicator useless, and that, in conjunction with the rough seating accommodation and moderate weather protection, render her less luxurious to fly in than many machines.

Still, considering her very low price, I think she is perfectly marvellous; her proper duty no doubt is the school, for which she is admirable; but she is also splendid for the private owner of very limited means, as I should have no hesitation in using her for any amount of cross-country work; she has a very good margin of lift, and rises quite fairly quickly and stops well. Her "Y" Vedrai engine has a very good reputation and only requires proper intelligence to look after. I know from close touch with the Deperdussin people when Sabelli was with them that once the "Y" Anzani is given enough oil it is very reliable and wants little attention.

Deperdussin Monoplane (70 h.p. Gnome) (Oct. 20/12).

A few days ago, through the very great kindness of Lieut. Grey, I had a short very low flight on his (Service) machine of the above type. I only did a single circuit, having to come down as the engine was not running properly.

She struck me as being a very easy machine to handle, but the view from the pilot's seat, as for landing, might be a good deal better; having a very good length of machine in front of the pilot, it is certainly a help to the pilot. What I noticed particularly was that I was pushing very hard on the control wheel, i.e., carrying a big load on the elevator flap, though this may be partly due to the fact that I was purposely keeping her from climbing; also that in spite of its being almost a calm, I could feel the wheel kicking at me quite strongly, i.e., automatic warp; owing to having a big weight on the tail skid she does not steer over well on the ground, though obviously the pilot can soon, with practice, overcome this.

My flight was too short to test for inherent stability, etc., though from the way she handled I should expect to find she had a certain amount, though probably very lively and terrifying at first if left alone. She is very light on her rudder and answers it well. With the scuttle dash now fitted the pilot is quite reasonably comfortable, but passenger flights have shown me that though the passenger can see very well, his accommodation is the very worst I have ever experienced he gets his head blown off and his lower part is in a "cave of winds." [This defect has been largely overcome in later types of this make.—C. G. G.]

Handley Page Monoplane (70-h.p. Gnome) (Nov. 15/12).

I had this machine out for the first time last Saturday, i.e., she was flown a little at the Trials by "Petre the Painter," but has since been reconstructed and with different wings.

She is extremely interesting compared with the "50" machine; longitudinally she is dead stable, i.e., I held the elevator control, as far as I could tell, rigid, and she never varied a bit; the "50" is good, but not quite so good as this. Laterally, she rolls in a most unpleasant way, and banks to an absolutely appalling angle if left alone. I did not let it alone after the first time: though rolling heavily she recovers herself perfectly without any use of the warp; she appears to have a very regular periodicity, which I hope to time next time. She lacks the v.g. [very good] directional stability of the "50", i.e., on a roll she requires a little rudder to prevent her swinging to the low side. This use of the rudder is distinct from the use I very often make of it to stabilise a machine by sharp little pushes. In turning, as soon as she approached a uniform curvature, one continues to turn with a negative pressure on the rudder, i.e., on the outside thereof. I have not previously experienced this, even on the all-enclosed Avro, though I am told several types have it, notably Ogilvie's Wright and the B.E.2.

A Word for Dirigibles.

A reader of The Aeroplane, who is a great believer in dirigibles, and who at the same time happens to be in a position to follow very closely the doings of the British Army airships, recently informed the writer that the remarks published from time to time in this paper referring to the "Delta" were not altogether in accordance with facts. He points out that the chief trouble with the "Delta" on her voyage to Finchley was that one engine broke a crankshaft, also that the framework of the machine never buckled while in the air, because the machine never went out with it fitted, the reason for this apparently being that the framework was built not fit the envelope, and, consequently, when the machine was wanted in a hurry for manœuvres it was rigged up simply as a non-rigid, and since then has behaved so satisfactorily without a framework that the idea of making her a semi-rigid has been abandoned.

This gentleman also states that the "Delta" has proved to be the fastest airship in the world except the Zeppelin, and that it is possible for her or any other airship to go out in a wind which is practically as great as her own flying speed, while he doubts very much whether an aeroplane would be of much practical use under similar circumstances. While admitting, for example, that Verrier's big flight from Brooklands to Hendon, in which occasionally the wind touched 55 miles an hour, was excellent as a flight, he doubts whether much observation could have been done under the circumstances, whereas he holds that in a dirigible which was forced to stand still by a wind equal to its own flying speed observations could be made with comparative comfort. He also expresses doubt as to whether an aeroplane carrying a passenger and explosives would succeed in reaching a greater altitude than a modern dirigible.

In answer to this however, one might point out that for the purposes of destroying dirigibles very fast-climbing single-seated machines will probably be used, though the rules of the French Military Competition last year, which insisted on three-seaters, were drawn up expressly with the idea of evolving dirigible destroyers. He draws an interesting comparison between dirigibles and Dreadnoughts, pointing out that though a Dreadnought opposed to about thirty mobile torpedo-boats, or even half a dozen submarines, would not have a very good chance, yet no one believes Dreadnoughts to be of little value. This, of course, is quite a legitimate and a correct analogy, but it only shows the need for us to possess a sufficiently large fleet of aeroplanes before we start investing much money in big dirigibles. When we have got a sufficiency of destroyers then let us have a large fleet of aerial Dreadnoughts.

Royal Aero Club Certificates.

At the committee meeting on the 7th inst. the following aviators' certificates were granted:—

383. Lieut. George Negresco (Roumanian) (Bristol monoplane, Bristol School, Salisbury Plain).

384. Walter Featherstone (Bristol biplane, Bristol School, Brooklands).

385. Lieut. Eardley Todd (Welsh Regt.) (Bristol biplane, Bristol School, Brooklands).

386. Lieut. G. W. Mapplebeck (King's Regt.) (Deperdussin monoplane, Deperdussin School, Hendon).

387. Lieut. Jack Empson (4th Royal Fusiliers) (Bristol biplane, Bristol School, Brooklands).

388. Arthur Ewing, R.N. (Bristol biplane, Bristol School, Brooklands).

389. Capt. D. W. Powell (Northampton Regt.) (Bristol biplane, Bristol School, Brooklands).

390. Gordon N. Humphreys (Caudron biplane, Brooklands).

391. Lieut. A. B. Thompson (East Lancs. Regt.) (Bristol biplane, Bristol School, Brooklands).

392. Lieut. Lionel W. B. Rees, R.G.A. (Bristol biplane, Bristol School, Salisbury Plain).

The Erith Accident.

On the afternoon of January 13, Mr. L. F. Macdonald, with Mr. Harry England, as passenger, flying a Vickers' monoplane with a 70-h.p. Gnome engine, from the test-ground of Vickers, Ltd., at Erith, came down in the Thames, and both were drowned.

Mr. Macdonald took his certificate, No. 28, awarded on November 15, 1910, at Brooklands, on a Bristol biplane, and



The late Mr. L. F. Macdonald.

was one of the first three or four of the long list of Bristol pilots. Very soon after taking his certificate he went out to Australia with the mission under the management of Mr. Sidney Smith, which first demonstrated the possibilities of military aviation to the Australian Commonwealth. After Mr. J. J. Hammond, who went out as chief pilot, left the firm, Mr. Macdonald was appointed to the position and made a number of very fine flights at various places in Australia with people of note on board, including one over the centre of Sydney with a distinguished officer of the Australian Army as passenger.

Not long after his return to England Mr. Macdonald joined Vickers, Ltd., where Captain H. F. Wood, who had taught him to fly, had taken over the control of the aviation department. He soon became a monoplane pilot of marked ability, though his enthusiasm and daring occasionally had to be kept under control in his own interests, for his intense desire to do some really big flight tempted him at times to fly when conditions were by no means favourable. Nevertheless, he made many flights of sufficient extent to show him to be a pilot of quite the first class, notably the flight on "Vickers VI" from Erith to Brooklands via Hendon, when the weather was so thick that he and his passenger, Mr. Challenger, missed Hendon, and went on till they recognised the Staines reservoirs; and later the big flight with the same passenger in equally bad weather from Bognor, where they had been tuning up for the Military Aeroplane Competition, to Ringwood in the New Forest, where they arrived owing to mistaking South Lymington Water for a tributary, and so just missed delivering the machine by air for the competition. Thereafter he flew splendidly in very bad weather on many occasions over Salisbury Plain.

After the competition he flew a good deal at Brooklands and at Erith, but for some few months past he has been taking a well-earned rest, on which, Macdonald told me about ten days ago, Captain Wood insisted for the good of his health, though he himself did not want to take a holiday, for he was as keen on flying as on the day he started. At the same time he impressed on me how contented he was with his position, and how carefully he had been looked after by the firm, his only grievance being that he was not always allowed to go out and fly whenever he liked—a salutary precaution in his case.

Macdonald was, of course, a Highlander by descent, though a West Countryman by upbringing, and possessed a very likeable personality, the gentleness of his West Country manner and accent combining with his Scottish keenness, and acting as an antidote to the occasional fits of moodiness which are an essential factor in the Highland temperament.

He was only twenty-two years of age, and his loss not only deprives many of us of a personal friend whom we shall miss greatly, but takes from this country a pilot of great ability and greater promise.

Mr. Harry England will be remembered by many as one of Mr. Sopwith's mechanics at Brooklands. When Mr. Sopwith closed his school to devote himself to constructional work England went over to Vickers, Ltd., with the school machines. He was a cheery little soul, a good worker, always ready to oblige anyone who wanted help, and he had a quaint way of expressing himself which kept his fellow workers in a perpetual good humour. He was a workman of a type which is badly needed in this country—the man who is keen on his job and does not mind exerting himself when there is urgent work to be done. He can ill be spared.

The Accident.

The accident itself seems a simple affair, though nothing positive can be known unless the machine can be rescued intact from the bottom of the Thames. The machine was a new Vickers monoplane with a 70-h.p. Gnome engine. It left the firm's test ground at about 3.30 p.m. on Monday. After flying out over the river for a few minutes it is reported that an explosion was heard and the machine came down in the river near the Essex shore. It floated for two or three minutes during which time one of those on board climbed out on to a wing and started to swim for the shore, but sank before some bargemen who started to his rescue could reach him. The other man, apparently, went down with the machine.

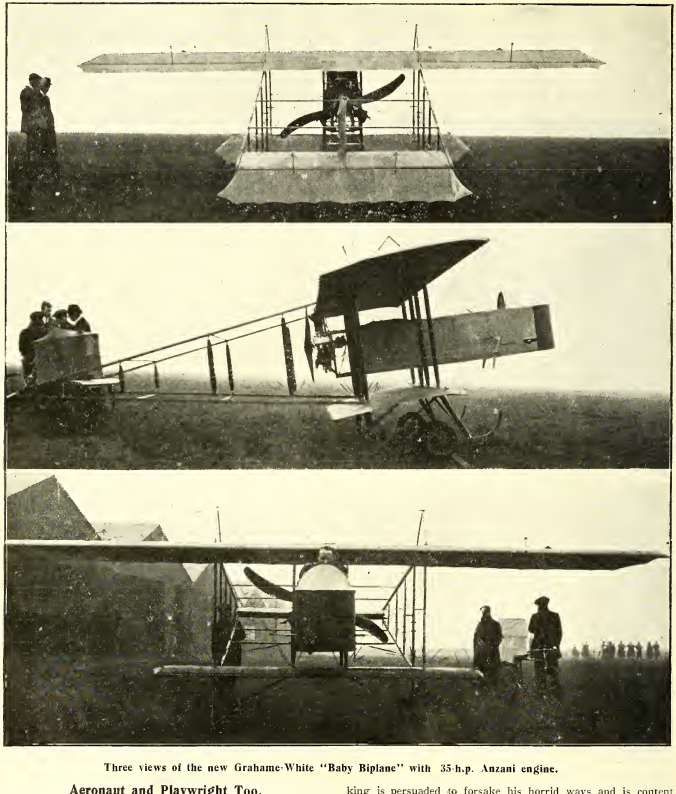
The descent into the water and the explosion may with a fair chance of accuracy be ascribed to the usual performance of a 70-h.p. Gnome blowing out a valve, a habit peculiar to this type unless fitted with the new pattern valves. The failure of either man to reach the shore may have been either the weight of their heavy flying clothes or inability to swim, or more probably the extreme cold of the water. The machine is said to have floated nose down while she remained on the surface, in which case the men in front might be plunged straight into the water and momentarily stunned by the shock. The Vickers custom is very properly to insist on pilots and passengers wearing safety belts, and Macdonald himself has told me of his firm belief in this order. The fact that one man got out and started to swim before the machine sank is sufficient answer to those critics who immediately on hearing of the accident remarked: "Of course, both were strapped in and both were drowned." In a case like this it is much more likely that without belts the men would be flung into the front of the machine as it struck the water, and stunned.

As to preventing the recurrence of similar accidents, the only remedy seems to be that all machines should have sufficient watertight compartments in the fuselage to keep them afloat for some hours. The fact of this being a steel machine would make little difference in her ability to float, for it is not the wooden frame work of other machines which keeps them up but the fact that their wings happen to be more or less watertight. The wood in a light machine would hardly make a raft on which a Gnome engine and the other metal parts would float, and any heavily-loaded machine will sink unless it has absolutely water-tight compartments, which not one machine in the world has got.

A more reliable engine would have prevented this particular accident just as it would have saved dozens of other lives, those of Lieut. Parke and Mr. Hardwick among them, and it is only now becoming known that the 70-h.p. Gnome with its original valves is extremely unreliable. The remedy is to fit the new type valves, a very expensive operation. C. G. G.

For Mrs. Hardwick.

The following additional amounts have been received and have been forwarded to Mrs. Hardwick:—The Rev. Alfred and Mrs. Parke, £10; Mr. Eric Hayman, £1 1s.; Mr. J. D. Higgin, £1 1s.; Mr. Richard Fort, £25; "Anonymous," £25; Mr. Oliver Thomas (U.S.A.), £2; "Anonymous," £5. Total for the week, £60 2s. A letter from Chelsea has been forwarded to Mrs. Hardwick.



Three views of the new Grahame-White "Baby Biplane" with 35-h.p. Anzani engine.

Aeronaut and Playwright Too.

It is time for the versatile marine to look to his laureis. Captain C. M. Waterlow, R.F.C., has written a play; not only so, he has composed the music, rehearsed and produced the entire affair as well. "Stella and the Elves" is a fairy play involving a caste of some thirty children, whose training must have called for considerable skill as well as labour and patience. The story concerns a beautiful young lady—Stella, in fact—whom a rather wicked king wishes to marry. Stella's adventures are both varied and exhilarating; she suffers transformation into a boy; spells are cast over her; she is captured by malevolent elves, and freed by beneficent fairies. A magic snuff-box, with its attendant slave, plays an important part in the scheme of events. Finally, the naughty king is persuaded to forsake his horrid ways and is content to marry Stella's nurse. Judging by the enthusiastic reception of his piece at Farnborough last week, Capt. Waterlow's dramatic efficiency rivals his efficiency in the air. One ought to add that this is by no means Capt. Waterlow's first essay into the dramatic sphere, two other plays at least stand to his credit.

The R.Ae.C. Annual General Meeting.

The annual meeting of the Royal Aero Club will be held on Wednesday, March 19th, 1913.

Notices of motion for the general meeting must be received by the secretary not less than twenty-one days before the meeting, and must be signed by at least five members.

The Week's Work.

MONDAY, January 6th.

R.F.C. (Central Flying School).—Fairly good weather, little or no wind, bright sunshine early. After lunch, strong S.E. wind and heavy rainstorm cut short good day's work, worse weather preventing any further flying during week. On Avro 404, Capt. Fulton, R.F.A., 5 mins. testing weather; Ldg. Seaman Bateman two good flights of 15 mins. each, making heavy landing first but improving later. Petty Officer Andrews two 15 min. flights, one at 1,800 ft. in heavy rain, but making splendid landings. On Avro 406, Air Mechanic Higginbottom two 15 and one 5 min. On Maurice Farman 411, Lieut. Longmore, R.N., with Ldg. Seaman Prickett 12 mins., with Asst.-Paymr. Lidderdale 23 mins., with Air Mechanic Collis 14 mins. On Maurice Farman 403, Major Ashmore 30 mins.; Ldg. Seaman Pricket 17 and 20 mins., two very good flights making good landings. On Maurice Farman 415, Major Ashmore 10, 20, and 35 mins. Engineer-Lieut. Randall, R.N., 29 mins. On Maurice Farman 418, Master Mechanic T. O'Connor with Ldg. Seaman Daniels 7 mins.; Lieut. Longmore 10 mins. On Short biplane 401, Lieut. Longmore with Ldg. Seaman Brady 10 mins., then Ldg. Seaman Brady circuits alone 7 and 5 mins. and started for first half of brevet, observed by Capt. Paine, R.N., and Lieut. Longmore. Owing to magneto trouble forced to land after 15 minutes' flying and having done four figures of eight. Another magneto was fitted and Lieut. Longmore 7 mins. testing machine. During afternoon Ldg. Seaman Brady again went for brevet and although he only managed to get half done, great credit is due to him for after about second figure-eight a big wind and heavy rain came on and he battled hard and well through it and so succeeded in gaining first half. His time was 25 mins. Rain and wind prevented any more flying.

R.F.C. (Farnborough).—Moderate south-easterly wind, clouds very low, raining at intervals. On Maurice Farman No. 215, Capt. Brabazon 18 mins. at 1,500 ft. Capt. Pigot 13 and 32 mins. at 1,000 ft. Lieut. Herbert with Lieut. Gould as passenger fine flight of 22 mins., finishing with very good spiral glide from 1,700 feet. Lieut. Gould two flights of 5 mins. On 266 Capt. Becke with Mechanic Baughan for 10 mins. at 1,300 ft., with Major Raleigh 8 mins. at 1,400 ft. On Bréguet 213 Major Raleigh 6 mins. and 20 mins., one with Mechanic Ankrett for 10 mins., reaching 1,300 ft. On "B.E." type 206, Lieut. Joubert de la Ferté 10 mins., then one of 20 mins., finishing with fine spiral glide from 2,000 ft. Lieut. Lawrence two good flights of 10 and 20 mins. Mr. de Havilland testing "B.E." type 204, later on "B.E.2," taking passengers one flight, taking Mechanic Parker for 10 mins. M. Verrier with passenger arrived from Hendon on new Maurice Farman, later passing speed and rolling tests, giving very fine exhibition of flying. Airship "Gamma" several good trips.

Hendon.—AT GRAHAME-WHITE SCHOOL, rather windy but Mr. A. H. Bayetto getting in good rolling practice under Mr. Mr. Louis Noel.

AT W. H. EWEN SCHOOL, pupils out at 10.30 under Mr. Lewis Turner and M. Baumann. Capital day's work, pupils getting in good practice. M. Baumann after test on 28-h.p.



Mr. Jack Alcock, the latest crack pilot.

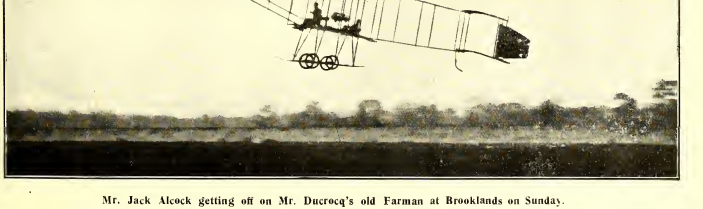
Caudron handed over to Lieut. Moxly and Messrs. Zubiaga, McGregor, and Prosser, who each did straights, handling biplane excellently. After lunch above pupils again out. Mr. Lewis Turner then put up several splendid flights on the 35-h.p. and the 60-h.p. two-seater Caudrons, in one being accompanied by Captain de Villiers, inventor and demonstrator of the "wireless" airship.

AT BLACKBURN SCHOOL, in morning Mr. H. Blackburn did 10 mins. trial on rolling machine, followed by Messrs. Christie and Buss with 20 mins. practice each. In afternoon Messrs. Christie, Glew, and Laurence Spink straights for an hour and a-half, and Mr. Morris 10 mins. rolling.

Brooklands.—AT DUCROCQ SCHOOL, Mr. J. Alcock circuits in usual style. Mr. McAndrew circuits and figures of eight. Mr. Alcock circuits to test new Gnome.

AT PASHLEY BROS., E. and C. Pashley out for considerable time testing ———— oils.

AT VICKERS SCHOOL, quite a lot of flying done on biplane.



Mr. Jack Alcock getting off on Mr. Ducrocq's old Farman at Brooklands on Sunday.

Mr. Barnwell circuits with Major Cameron behind, and then straights with pupil in pilot's seat. Mr. Knight out for few circuits alone, after which Major Cameron about half an hour alone, flying straights and circuits. This pupil is showing very good progress.

At Bristol School, Mr. Merriam with Messrs. Archer and Neville. Capt. Rickards alone. Mr. Bendall with Messrs. Archer and Neville. Mr. Merriam with Lieut. Blatherwick. Mr. Lane got in good straight flights.

Salisbury Plain (Bristol School).—Messrs. Jullerot and Busteed trials. Lieut. Rees completed test for certificate. Lieuts. Vernon Marix, Littleton, Bowhill, and Bigsworth out alone. Lieut. Vaughan with Messrs. Jullerot and Busteed, former afterwards with Lieut. Tod. Mr. Busteed trials on 80-h.p. mono. and on school mono. Mr. England with Lieuts. Tod, Vaughan and Mr. Travers. Prince Cantacuzène for his first time on 80-h.p. mono. with passenger, and in afternoon again out, making good cross-country flight round Salisbury, Shrewton, and Upavon in 20-m.p.h. wind.

TUESDAY, January 7th.

R.F.C., Farnborough.—South-westerly wind about 25 m.p.h. very bumpy. On Maurice Farman 215, Lieut. Herbert 13 mins. at 1,200 ft., getting bumped about very much. On "B.E." type 206, Lieut. Lawrence with Capt. Beattie as passenger 10 mins.; conditions too bad for further flying.

Hendon.—At Deperdussin School.—M. Deroye, of Italian Deperdussin School, out on 75-h.p. two-seater in 25-30 m.p.h. wind up to about 1,200 feet; lost bearings in mist, but got safely back, after 25 mins.

WEDNESDAY, January 8th.

R.F.C., Farnborough.—Strong south-westerly wind, very gusty 40 to 50 m.p.h. on ground very bad for flying, especially machines with large surfaces. On Maurice Farman 215 Capt. Becke made two fine flights, taking Lieut. A. C. Christie.

Hendon.—At Grahame-White School, Mr. R. H. Carr straights with Mr. M. Manton on No. 7 machine, and later with Mr. Noel. Mr. A. H. Bayeto rolling on 48 machine.

At W. H. Ewen School, Mr. Turner out on 35-h.p. Caudron.

At Blackburn School, pupils out and busy under Mr. H. Blackburn. Two trials by Mr. H. Blackburn. Mr. Laurence Spink 45 mins., Mr. Buss half-hour, and Mr. Glen half-hour; Mr. Morris 15 mins. rolling.

At Bleriot School, Lieut. E. Conran on No. 3, but discontinued owing to rising wind.

At Deperdussin School.—Mr. Valazzi on taxi 2, and then handed over to Lieut. Hordern for rolling. Messrs. Valazzi, Scott and Andrews straights on No. 3 brevet machine. Later M. Deroye on 75-h.p. two-seater, circuits and then up with Mr. Spratt.

Brooklands.—At Vickers School in morning, Mr. Knight tried biplane but found it much too windy. In afternoon Mr. Barnwell testing for adjustment new 100-h.p. mono No. 7.

At Bristol School, Mr. Merriam testing with Mr. Neville and later took Lieut. Blatherwick; Mr. Bendall also out.

Salisbury Plain (Bristol School.)—In late afternoon Mr. Busteed trial of 80-h.p. mono. in wind of close on 50 m.p.h.

THURSDAY, January 9th.

R.F.C., Farnborough.—Very gusty south-westerly wind 30 to 40 m.p.h. on ground, and much worse higher up. Major Raleigh fine flight of 13 mins. on Bréguet 210. Later went up on Bréguet 213 to test wind, but found it worse than ever, so no further flying.

Hendon.—At Grahame-White School, in spite of bad weather excellent exhibitions by Messrs. Noel, Desoutter and Manton.

Brooklands.—At Vickers School, Mr. Barnwell testing No. 7 mono. in morning and again in afternoon with Mr. Knight as passenger.

At Bristol School Mr. Merriam for trial.

FRIDAY, January 10th.

R.F.C., Farnborough.—Moderate westerly wind, very misty. Major Higgins on Maurice Farman 425 attempted to fly to Upavon, but not being able to see ground at 200 feet owing to heavy mist, returned to aerodrome. Major Raleigh two short flights on Bréguet 213; later one flight on Bréguet 210 with Major Higgins as passenger. During morning Major Raleigh rolling practice on new Maurice Farman 302. Mr. de Havilland out on "B.E.2" and 204 making several good flights.

Brooklands.—At Vickers School, good circuits by Mr. Barnwell in gusty wind on No. 7 monoplane, and then carried Capt. Salmon as passenger.

At Bristol School, Mr. Merriam trial with Lieut.



Mr. Merriam flying as Father Christmas.

Kchrmann, new pupil. [Presumably a Czech, from spelling of name.—Ed.]

Salisbury Plain.—At Bristol School M. Jullerot trial but gusts too strong for pupils.

SATURDAY, January 11th.

R.F.C. (Farnborough).—Very miserable day, strong westerly wind and raining heavily all day. No flying, only Mr. de Havilland out early rolling on new "warplane" built by Aircraft Factory.

Hendon.—At Blackburn School, wind and rain. Mr. Foggin (Blériot flier) joined school, not that he requires further knowledge, but for the sake of practice, having purchased a Blackburn monoplane for exhibition purposes.

SUNDAY, January 12th.

Hendon.—At W. H. Ewen School, Mr. Lewis W. F. Turner out doing some fine solo flying on 60-h.p. two-seater Caudron, afterwards giving several passenger flights.

At Blackburn School, in afternoon, flight of half an hour by Mr. H. Blackburn on the school rolling machine, which flies very well and safely, if a trifle slow.

Grahame-White pilots out as usual in fine form, Messrs. Noel, Desoutter, Manton and Gates all performing well.

Brooklands.—At Duchocq School, Mr. J. Alcock giving exhibition of aerial switchbacks and banked turns, later competed in "get off" competition, taking second prize. Mr. McAndrew circuits.

At Pashley Bros., Mr. E. Pashley out testing wind. Third in competition although having trouble through petrol stoppage.

At Vickers School, Mr. Barnwell circuits on No. 7, both alone and with passenger, testing propellers. Mr. Knight was also out propeller testing on No. 5 monoplane and flying excellently. Too windy for pupils.

At Bristol School, Mr. Merriam testing, afterwards acting as aerial Santa Claus. Mr. Bendall testing. Messrs. Bendall and Merriam in competition, Mr. Merriam winning. Instructors up with Lieut. Blatherwick and Messrs. Hall and Neville after competition. Mr. Merriam finishing with long spiral glide to sheds with Lieut. Kchrmann.

R.F.C., Central Flying School.—Fresh northerly wind, very bright sunshine. Bristol monoplane, evidently from Lark Hill, flying over school about 10.45 a.m.

Exhibitions at Hendon.

In spite of the cold and fog on Thursday last the flying at Hendon was of the usual high quality, Messrs. Noel, Desoutter and Manton all flying exceedingly well. Saturday, of course, was an utterly impossible day, but Sunday brought out quite a number of machines. About mid-day, M. Verrier started, in spite of the wind, and delivered a new British Maurice Farman to the Navy at Eastchurch. In the afternoon Mr. Noel on the 80-h.p. Farman, Mr. Desoutter on the 50-h.p. Blériot, and Messrs. Manton and Gates on the Grahame-White biplane, were all flying well, and in addition, Mr. Lewis Turner gave a fine exhibition on the 60-h.p. Caudron, and Mr. Harold Blackburn flew the Blackburn monoplane. Altogether the visitors had an excellent afternoon's sport.

Public Safety and Accident Investigation Committee.

REPORT ON THE FATAL ACCIDENT TO CAPT. PATRICK HAMILTON AND LIEUT. A. WYNESS-STUART, SEPTEMBER 6TH, 1912.

Brief Description of the Accident.—Capt. Patrick Hamilton, with Lieut. A. Wyness-Stuart as passenger, flying on a French Deperdussin two-seater monoplane fitted with a 100-h.p. Gnome engine, left Wallingford on the morning of September 6th, 1912, for work in connection with the Army manœuvres. When approaching Hitchen from the direction of Graveley the aircraft was observed to become unsteady, shortly afterwards the wing to break, and the aircraft to fall to the ground. The aviator and his passenger were both killed instantaneously.

Report.—The committee met on Tuesday, October 22nd, 1912, Wednesday, January 1st, and Monday, January 6th, 1913.

From the consideration of the evidence, the committee regards the following facts as clearly established :—

(1) That this aircraft was built in France about May, 1912. It had taken part in the Military Aeroplane Competition on Salisbury Plain during the month of August, 1912, and had been awarded the second prize of £2,000 in the competition open to the world. It was subsequently purchased and taken over by the Government.

(2) That when the wing broke the aircraft fell from a height of at least 400 ft. from the ground.

(3) That the aircraft struck the ground nearly vertically and nose first, its fall being broken by a high hedge and bank in such a manner that no parts of it could have been projected more than a few feet after it struck the ground.

(4) That parts of the structure of the aircraft—viz., an aluminium plate from the left wing spar, some pieces of the cabane struts, the cowl which covers the engine, and also parts of the engine, viz., two push rods—were, nevertheless, found some 600 feet away from the spot where the aircraft struck the ground, and somewhat to the right of the direction from which the aircraft was seen to come.

(5) That some part or parts of the engine, while revolving, had been in contact with the interior surface of the cowl or cover which is fitted over the upper portion of the engine, and that eight of the push rods had been broken off close to the crank-case of the engine.

(6) That the bolts which attached the outside cable to the underside of the front spar of the left wing sheared in the air.

(7) That a piece of the propeller was missing from one of the blades and has never been found.

(8) That the engine was overhung and not fitted with the front bearing recommended by the makers for this type.

(9) That the front strut of the cabane was supported above the engine.

Opinion.—The committee is of opinion that the collapse of the aircraft was due to the breaking of the outer wires supporting the left wing by a derangement of the cabane whilst in flight, caused either by :—

(a) The fouling of the cowl by a valve-rocker owing to the fracture of a valve tappet, or

(b) The partial failure or breakage of the propeller, which, throwing the rotating system out of balance, caused severe racking stresses and strained the attachments of the engine to such an extent that they ultimately gave way and the engine shifted. The engine attachments were too light for the engine.

Recommendation.—The committee draws the attention of manufacturers, designers, and aviators to the risk involved by want of provision against the consequences of possible failure of parts of the engine or its attachments to the aircraft, when such failure would lead to the breakage of other and vital parts of the structure.

REPORT ON THE FATAL ACCIDENT TO LIEUT. WILFRED PARKE, R.N., AND MR. A. HARDWICK, DECEMBER 15TH, 1912.

Brief Description of the Accident.—Lieut. Wilfred Parke, R.N., with Mr. A. Hardwick as passenger, flying on a Handley Page monoplane fitted with a 70-h.p. Gnome engine, left the London Aerodrome, Hendon, on Sunday, December 15th, 1912, at about 11.50 a.m., with the intention of flying to Oxford. When approaching the Wembley Golf Links, after having been in the air about five minutes, the aircraft was observed to be flying tail down. When to the west of the Gold Links the aircraft made a half-circle to the left, the pilot possibly, having the intention of returning to Hendon. During this turn he crossed over a line of trees, which brought him over the Links. The aircraft, when a short distance from the trees fell to the ground, killing the pilot and passenger. The aircraft was completely wrecked.

Report.—The committee met on Friday, December 20th, 1912, Wednesday, January 1st, and Monday, January 6th, 1913, and heard the evidence of several witnesses.

From the consideration of the evidence the committee regards the following facts as clearly established :—

(1) That the engine was not running well at the start from Hendon, and that the aircraft had considerable difficulty in leaving the ground and climbing.

(2) That witnesses agreed that, during the journey from Hendon to Wembley, the aircraft was flying weakly.

(3) That the aircraft was flying into the wind on the west side of a belt of trees running along a ridge. From the end of this ridge there is a somewhat sudden descent and a line of similar trees into the valley and to the railway at the bottom of it. The aircraft turned to the left beyond the belt of trees, crossed the line of trees, and then flew parallel on the east side of the belt for about 120 yards before it fell, diving head first to the ground. The wind at the time was southwesterly, with gusts. The portion of the belt of trees which may have had some influence on the accident runs due north and south, and therefore the wind was blowing at an acute angle to and over the trees.

(4) That before commencing the turn the aircraft was about 40 ft. above the top of the belt of trees. After completing the semi-circle the aircraft was 60 ft. from the ground, i.e., level with the tops of the trees, and after that was at no time more than a distance of 50 yards away from the trees.

(5) That the field of view from the pilot's seat was very limited in the vicinity of the aircraft below the level of the wings.

Opinion.—The committee is of opinion that the pilot put about owing to a failing engine, presumably with the intention of returning home, a distance of only a few miles. The committee is of opinion that the accident was due to the failing power of the engine combined with the loss of flying speed on turning sharply, which loss was accentuated by the wind disturbances due to the configuration of the ground and to the presence of the belt of trees on the windward side. The pilot's field of view was undoubtedly restricted, but whether or not this affected his actions the committee is not prepared to say.

Recommendation.—The attention of manufacturers and aviators is specially drawn to this particular accident, which emphasises the risk that is run in starting a cross-country flight with an aircraft which, from one cause or another, is underpowered at the time.

The committee again draws attention to the primary importance of a good field of view for the pilot.

Sunday at Brooklands.

Brooklands looked quite like its old self on Sunday last when the off-postponed visit of Father Christmas per aeroplane took place. This attraction, and the fine weather, brought a very respectable crowd of people, and as the wind dropped soon after three o'clock, a good deal of flying was done. Mr. F. W. Merriam, in the traditional costume of Father Christmas, alighted in front of the enclosure on a Bristol biplane, and after distributing presents to all under fourteen years of age, flew off and did some very pretty exhibitions. Mr. Bendall, on another Bristol, flew nicely.

Mr. Jack Alcock, who has suddenly developed into a biplane pilot of the very first class, turned out on Mr. Ducrocqs' small Farman, and flew in a manner reminiscent of Messrs. Pizey and Gordon England. On a really up-to-date machine Mr. Alcock would soon make a big name for himself, though it is only fair to say that the little Farman still flies as well as she ever did. Mr. Pashley, on the old Sommer which once belonged to the late the Hon. C. S. Rolls, did surprisingly well considering the age of the machine.

In addition to this band of veteran machines, Mr. Knight made a fine high flight over the surrounding country on Vickers 5, and then Mr. Barnwell turned out on the new 100-h.p. Vickers VII, which performed in excellent style; although the engine is not yet properly tuned up the machine appears to be very fast, and when the engine is right should do fully 70 m.p.h.

Another interesting first appearance was that of the revised Coventry Ordnance biplane. Mr. Raynham brought her out late in the evening with Mr. Manning as passenger, and though the 100-h.p. Gnome still needs a great deal of tuning up the machine lifted quite easily, and it was found possible to fly her with seven of the cylinders switched off, this engine being fitted with separate ignition to each set of cylinders, so that she ought to develop quite a nice speed as well as being able to lift a healthy weight.

First Aid in Aviation.—No. 3. Bandaging.

So far we have dealt with first-aid dressing and the transport of the wounded man. We now proceed with that important part of first-aid which consists in correctly applying a bandage to an injured limb or other part of the body.



Fig. 1.



Fig. 2.



Fig. 3.

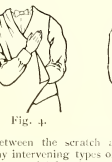


Fig. 4.



Fig. 5.



Fig. 6.

Between the scratch and the smash-up there are a good many intervening types of accidents, and in most of them it is very essential for the comfort and well-being of the patient to apply bandages to the injured part as promptly as may be. Two kinds are used in first-aid work, the triangular bandage and the roller bandage. Of these, the triangular bandage is probably the more useful in emergencies since it requires less skill for its application. In certain cases, however, where firm pressure is required, as in fixing dressings, controlling bleeding, or bandaging fingers or joints, roller bandages must be used.

Triangular bandages, both open and folded, are applied in various ways and for various purposes. When used as a support, the base of the triangle should be applied to the part to be supported. The accompanying illustrations, Figs. 1 to 6, show some of the methods of attachment round the shoulders to support an injured arm.

Unfolded the triangular bandage is also used for bandaging the head, chest, shoulder, etc., and also to form a large sling to support the whole arm. Figs. 7, 8, and 9 show two of the chief methods of folding, the broad fold and the narrow fold. In fact, out of a folded triangular bandage the expert first-aid worker can get almost as many contrivances as a conjurer extracts from a top hat. It is by turns a splint holder, arm sling, tourniquet and foot-rest. The neck, eye, temple, ear, etc., can be bandaged, dressings fixed in place and secured or the hand and wrist supported by the deftly folded triangular bandage, Fig. 10.

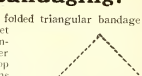


Fig. 7. Triangular Bandage (folded once).

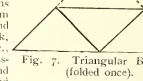


Fig. 8. Broad-folded Bandage (two foldings).

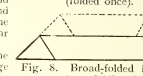


Fig. 9. Narrow-folded Bandage (three foldings).

For fixing splints the narrow folded bandage should be used in the case of fractures of the leg, ankle, arm or wrist, and the broad folded bandage for the thigh, knee, or chest. The folded bandage is placed on the splint at the spot where it is to be tied, the ends passed round the injured limb, crossed, and being brought to the front again, tied over the splint. Roller bandages can be used for fixing splints if triangular ones be not available. The knots should be made above and below the fracture and the bandages tied firmly, but not so tightly as to constrict the blood vessels.

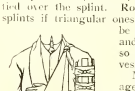


Fig. 10. Small Arm Sling (Showing, also, position of splints in fractured upper arm).

Methods of using triangular bandages in varying circumstances are fairly obvious, but they are adaptable to so many purposes that they cannot all be described in an article of this character. A practical acquaintance is best secured by buying one of the "tabloid" triangular bandages as made by Burroughs Wellcome & Co. Each is imprinted with illustrations showing the method of applying them for different accidents and a few minutes' study of these drawings would be repaid by the possession of valuable knowledge of incalculable value at a critical moment. A further advantage of these "tabloid" bandages is that they are compressed into a very small space and are most portable.

The roller bandages and their correct use will be dealt with in the next article.

(To be continued.)

Steel Tubing in Aeroplane Work.

The use of steel tubing in aeroplane construction is increasing rapidly in this country as on the Continent, and its use is likely to go on increasing not only because of the greater number of machines which will be turned out in the next twelve months, but because steel tubing will be used so much more in various parts of machines. It was quite noticeable at the Paris Show that tubing was used for chassis struts by many firms who previously used wood. It is also used by many firms for wing spars, and for a number of minor purposes tubing is being adopted. As a general rule, special sections of tube are required, and when these sections are necessary there is no firm in the trade capable of supplying them better both in shape and quality than Accles and Pollock, of Oldbury. The writer has had something like ten years' experience of the work of this firm, and he has never heard a complaint either of the quality of their goods or of the workmanship put into special designs. The firm has always been the most up-to-date in the tube trade, for when special sections were required for motor-car and motor-cycle work, Accles and Pollock were one of the first to arrange for their manufacture on a businesslike basis, and they were equally well to the fore when aeroplanes first came into existence. Therefore, they can be recommended to all aeroplane manufacturers with the certainty that they will give satisfaction.

Messrs. Accles and Pollock, Ltd., intimate that they have for disposal a large aeroplane shed which was erected to house the experimental machine built some time ago by Lieut. Seddon, R.N. This shed measures 60 ft. by 50 ft., and is made with a Belfast roof supported by seven principals, with a 50 ft. span, and it measures 15 ft. high to the eaves. The firm are open to consider an offer for the shed as it stands, or for any parts of it. They are not asking a fancy figure, but wish to have the shed removed at an early date. It was built by a local firm who could readily give a price for taking it down and re-erecting it in any part of the world.

Mr. Hewitt's Preparations.

Mr. Vivian Hewitt, who did so much good flying in North Wales last year, and who flew from Holyhead to Dublin, is now getting ready for the coming season. Entirely new wings have been fitted to his Blériot and new wing stays throughout. The warping gear, which was originally of aluminium, has been replaced by steel made in Mr. Hewitt's own workshop, and a number of other stronger fittings have been fitted. Mr. Hewitt has, unfortunately, been unable to work for the last seven weeks owing to jumping off a wall, and, as he puts it, "breaking everything in his foot except the bones." It is strange how severely one can damage oneself in ways which are much simpler than flying.

The Imperial Maritime League.

Rear-Admiral the Hon. Richard Bingham and Mr. Samuel Hill-Wood, M.P., have joined the General Council of the Imperial Maritime League. This league is now taking a keen interest in the possibilities of naval aviation, and the influence the General Council is able to exert cannot fail to have a salutary effect.

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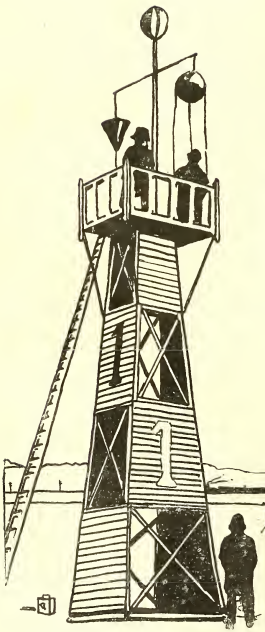
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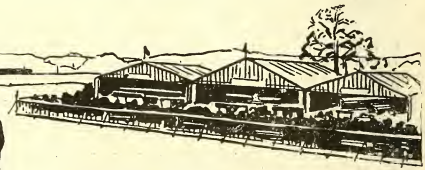
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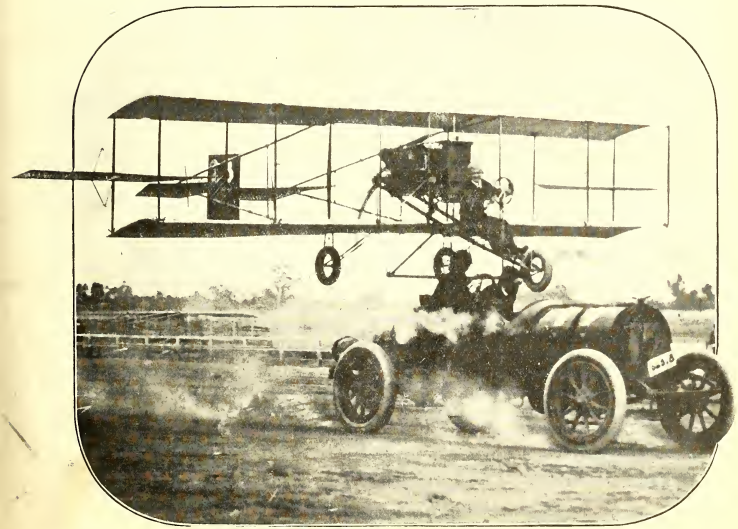
THE AEROPLANE

1d WEEKLY

Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, JANUARY 23, 1913. No. 4.

THE LIMIT.



Above is seen Mr. Lincoln Beachey literally "having a brush" with a racing car. Mr. Noël, of the St. Louis "Aero and Hydro," by whose courtesy the photograph is reproduced, reports that at times the front wheel of the aeroplane almost touched the head of the mechanic on the car.

Handley Page Monoplanes.

50 H.P. GNOME - £850

70 H.P. GNOME £1,050

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"Daily Telegraph," Monday, December 9th.

"Saturday was no exception to the rule. The day was a dismal one. Low-lying clouds, a thick mist, and withal a sharp gusty wind in the upper reaches, combined to make the conditions as unfavourable as possible. It was with some surprise, therefore, that we learned, shortly after noon, that the Handley Page monoplane, carrying a passenger in addition to the pilot, had started from Brooklands, where it had been flown the previous week, on its way to Hendon. The journey proved an adventurous one; in spite of the 20-mile wind, the ground was lost from sight in the mist immediately after the start. The monoplane rose to 400 feet, and was thereafter steered by compass. The only landmark seen during the flight was the spire of Harrow Church looming out of the fog. Even from the Welsh Harp, less than a mile away, the aerodrome was invisible, and it was only after circling for some time that the pilot managed to obtain a glimpse of the aerodrome and to effect a landing.

"REMARKABLE RECORD.

"The record of the Handley Page monoplane during the last two months has been a remarkable one. It is designed on a principle that endows it with a large measure of automatic stability; accordingly, the machine has been flown in all weathers, irrespective of the strength of the wind, for the purpose of demonstrating its undoubted qualities in this respect."

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'A.B.C.' AERO ENGINE

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Safety in Flying.

No good purpose can be served by denying that there are far too many accidents in flying. True, a number of the fatal accidents ought not to have been fatal if the pilots had had any luck, but on the other hand a number of men ought to have been killed who have not been, if the seriousness of the accidents they have had be taken into consideration, and it is just as important to prevent the latter class of accident as the former. Such a little thing makes all the difference. For example, if the late Lieut. Parke's engine had stopped before he began to turn down wind he and Mr. Hardwick would almost certainly have landed without damage and would have treated the whole thing as a joke. Similarly, if the late Mr. Macdonald's engine had held out for another minute the machine would probably have landed in Thames mud and he would have been chaffed about it for months, or if it had failed a minute or two earlier he would have come down in his own ground and might have gone up again a little later on without thinking anything of the incident. The point is that pilots particularly, and constructors to some extent, do not give enough thought to what may happen under any given set of conditions; it is enough for them that those conditions have occurred without anything happening.

Two Ways of Doing It.

There are two general and very opposed ways of flying. One is that of the man who weighs up all possible chances of accident and guards against them all as far as human foresight can do. Henry Farman's personal method of flying seems, for instance, to be laid on these lines. He is probably as good a pilot as any in the world, yet there seems no particular reason why he should not fly till he is too old and stiff to do so.

The other way is that of the man, who though a fine pilot as such, is mentally too lazy to take precautions. He flies on the basic principle that the odds are against a smash "this time." One of the cleverest car drivers of my acquaintance habitually goes "all out" at every country cross road he comes to, his principle being, in his own words, "the odds are about two millions to one against anyone else being fool enough to do the same thing and striking the same corner at the same moment, and if there is a slower car going for the corner the quicker I get across the less the chances of it hitting me." A delightful theory except for the possibility of the one-in-two-millions chances coming off at the two hundredth corner, in which case he and his car will undubitably be collected by the bonnet of another car possibly bigger and faster than his own. In the same way a pilot will fly over bad country rather than go a few miles round, fully aware of the impossibility of landing there, but cheerfully reckoning on the odds being a thousand to one against the engine stopping in the mile or so where it would be impossible to glide to a decent landing place. As this method of flying is a temperamental defect there is little use in lecturing pilots themselves on the subject, and it is mentioned rather as a suggestion to manufacturers that if a pilot flies in this way it is better for his employer to engage someone else to fly the machine.

There was a time when every aeroplane was so inherently dangerous that it was often better to take a big risk for a few minutes than to remain in the air longer and take a number of smaller risks. To-day machines are so much improved that the mere act of flying is hardly more dangerous than is driving a car. With proper care in keeping the machine and engine in order, and in the choice of weather and country in which, and over which, flying is done, one ought to fly unhurt for years.

An Evil Habit.

One evil habit common to many pilots, a habit which has caused innumerable accidents, fatal and otherwise, is that of getting off with a failing engine, in the hopes that it will pick up power in the air, or run better when it gets warmer. Unfortunately engines do sometimes pick up in this way, and pilots remember the times when it happens and forget the far greater number of times when the engine peters out altogether and lets them down after a straight flight of a few hundred yards. One of the best and fastest car drivers in this country was commenting on this habit recently and remarked how common it is for the average driver to get his car along somehow, juggling with the levers in the hopes that the engine will shake itself into proper order somehow, when by stopping for a few minutes and locating the trouble he could put the defect right. Instead, the driver hopes that heat will burn the oil off the plug which is misfiring, or warm up the carburretter, or that the vibration will shake the obstruction out of the jet or that the trouble will heal itself in some mysterious way. It is just this foolish trick of "carrying on" and hoping for the best that has cost thousands of badly needed pounds and many human lives. Here again, any employer whose pilot is given to this habit ought to see to it that his machines are in future flown by someone else, for the possible buyer, whether official or private, remembers simply that such and such a make of machine has had so many accidents, and does not trouble to remember, if he ever knew, what caused those accidents.

The days are past when it was difficult to find good pilots, and when the employer had to put up with anything a pilot chose to do so long as his machine was shown off to advantage. Now one can find with comparative ease men who are not only capable fliers, but who are amenable to discipline and will fly when and how they are told. In these days the best advertisement any aeroplane can have is that it has flown so many thousands of miles without an accident. This form of advertisement is fairly easily obtained by choosing obedient pilots and sending them for long trips over good country in good weather. Once in a while it may be good policy to demonstrate that a machine can fly in a wind as high as its own flying speed, or that it can land in a field three times its own length, but once these facts are proved no good purpose is served by continuing to do such things, and their constant repetition must lead to disaster in the end.

Improvements in Machines.

One often hears it said that there has been no improvement in the design or construction of aeroplanes in the past two or three years, and that the big flights of to-day are done only because pilots are more skilful and engine tuners more expert. To a degree this is true. The Farman type box-kite is still with us—though not with Farman—and the average school pupil who just scrapes through his certificate tests flies it as well as many a pilot who could have drawn his hundreds of pounds for "appearance money" at aviation meetings three years ago. The single-seater Blériot of to-day is outwardly much like those flown by Messrs. Morane, Drexel, McArdle, Radley and company at Bournemouth and Lanark in 1910. The Gnome engines now in use do not differ materially from that which M. Paulhan and Mr. Cockburn used at Reims in 1909. Yet there is a vast difference when one looks into details, and far greater differences will be seen in the machines which will be turned out this year, for we are beginning to know a little about distribution of weights and surfaces, strength of materials, and the effects of streamlines, of which we were all supremely ignorant in those early days.

The casual observer might say that the hard-worked Grahame-White school machine on which Messrs. Manton and Gates perform so regularly at Hendon is practically the Farman box-kite of 1909, with the type of tail used by Mr. Sopwith on the Howard Wright biplane of 1910. But observe the difference in the distribution of weight now that the pilot is perched out in front and takes nearly all the load off the tail. Consider also the effect of balanced ailerons on the big Maurice Farmans, and of the curved elevator flaps on the modern Blériots, the flaps which give to some degree a convex lower surface, as advocated by M. Sée. Consider also the increased reliability given to the 70-h.p. Gnome by the simple, if expensive, process of fitting the latest type valves. It is such comparatively unobserved details as these which account for machines which resemble their ancestors of a couple of years ago doing flights which would have been impossible then.

Also, machines are becoming stronger for less weight, and greater efficiency, obtained by greater knowledge of plane curvature, and by reduction of head resistance, allows us to carry greater weight, thus achieving added strength, while still keeping a greater reserve of power, so that the margin of safety is steadily increasing.

Problems Worthy of Study.

It is true that there is still much to learn, as Mr. Griffith Brewer points out in a recent article on the collapse of monoplane wings. He recalls that ten years ago the Wright Brothers showed that the centre of pressure below a plane moving at small flying angles travelled backwards as the angle of incidence decreased and as the speed of the plane increased. He argues that without changing the path of flight of the machine the speed of travel may increase, thus causing the centre of pressure to travel backward and so tending to turn the wings over forward. The effect of this change in the centre of pressure, as Mr. Brewer says, is a progressive twist from the shoulders of the wings outwards, and if the wings are twisted to such an extent as to bring pressure on the upper portion of the wing tips sufficient to exceed the support below the wings, a quick downward angular movement of the wings takes place, and the upper stays then receive the strain of the slack being taken up, in addition to the pressure received from the downward inclination of the ends of the wings. Probably the whip over in the change of direction of the strain does the actual breaking, and the wings are slammed down by the wind like suddenly released doors. Mr. Brewer points out that these effects may be produced by switching on the engine during a glide—another evil habit common to nearly all pilots, but one which is almost unavoidable with an engine which cannot be throttled down—or by speed variations caused by disturbances in the air itself. He adds that a rotary engine would appear to increase the danger, because the wings in twisting find themselves opposed by a more unyielding base than would be the case with an engine having no gyroscopic effect.

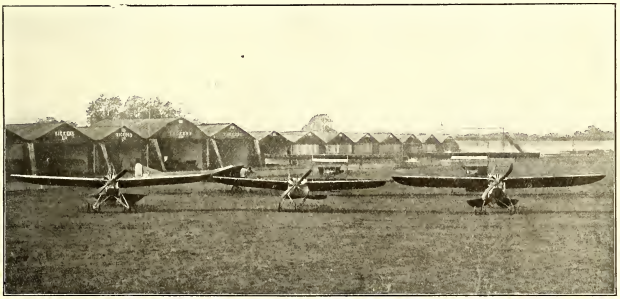
The whole of Mr. Brewer's argument seems very sound, and amplifies the views of M. Blériot, and those expressed in this paper by Mr. Chataway some months ago, on the subject of monoplane wings breaking downwards. Yet another cause, which may act in conjunction with this, was expounded to me recently by a well-known designer at present working in this country. He expressed the opinion that no one seemed to take much account of the inertia strains on wings. His view was that in monoplanes of big span, where each wing weighed perhaps 160 to 180 lbs., enormous strains were set up on landing, the wings tending to shoot forward as the chassis and fuselage were pulled up on contact with the ground. All wings are stayed forward by drift wires, but very few are stayed backwards against landing strains. Constant repetition of these landing strains may well disturb the internal bracing of the wings to such an extent that a sudden shock in the air when the machine is travelling fast, such as the whipping twist described by Mr. Brewer, or by the quick action of a powerful rudder may wrench a wing off at the butt, so that the spars break with a fore-and-aft strain and not with a direct upwards or downwards pressure as they would do in the case of a broken cable below or above, and in such a case no broken cables would be seen, because the internal



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woodwork or bracing wires would give way without breaking the main cables.

It appears also as if a big longitudinal moment of inertia would oppose a force to the twisting of wings almost, if not quite, as great as the gyroscopic force of a rotary engine on a smaller and lighter machine. No doubt all these strains can be worked out scientifically, if it has not already been done, but even to me, writing simply as a rule-of-thumb mechanic, it seems that enormous strains may be set up in these ways. However, though much may be still unknown in such directions as those indicated, the mere fact that we know we do not know is a proof that we are progressing.

Stability and Steadiness.

In the search for inherent stability we are also progressing. It has long been recognised that the Weiss and Dunne idea of back-swept wings and upturned tips had "something in it," but until last year no practical proof had been given of the stability of this type, for though the Etrichs had flown well in Austria, little was known about them. But during 1912 the continual successful flying of the Rumpler "Taube," the "Albatros," and the "Fokker" in Germany, and of the Handley Page, the Dunne itself—despite its quaint construction and obvious lack of power—and of the new type Shorts in this country, showed that whether with the upturned tip or not, the back-swept wing has a real advantage in assisting lateral stability. Writing purely without scientific theory, it appears to me as if, when flying level, a machine built on these lines is using both wings inefficiently, and that neither wing is really efficient until the machine rolls over onto it, when it at once gives its full lift and rights the machine, the other wing acting meanwhile as an "empennage."

The flexible trailing edge, as used in the Caudron, has also shown that it is an aid to stability, or at any rate to steadiness, presumably because it "gives" to every gust instead of lifting the machine, and in any case it certainly eases the shock, just as really good springing eases a car on a bumpy road.

It may, therefore, be worth while putting on record, merely as a personal opinion formed by the general trend of design, that the ordinary aeroplane of the future will be one with the engine in front of, or below, the pilot and passengers, with the propeller behind; and it will have back-swept wings with flexible trailing edges, and possibly upturned warping tips or balanced ailerons instead. In any case, it is fairly certain that a well-built machine which included those points of design would assist materially the safety of flying. C. G. G.

The Royal Aero Club.

The annual general meeting will be held on Wednesday, March 19th, 1913, at 4 o'clock, at 166, Piccadilly, London, W. Notices of motion for the annual general meeting must be received by the Secretary not less than twenty-one days before the meeting, and must be signed by at least five members. Wednesday, February 26th, 1913, is the last day for the receipt of notices of motion.

In accordance with the rules, the Committee shall consist of eighteen members. Members are elected to serve for two years, half the committee retiring annually. Retiring members are eligible for re-election.

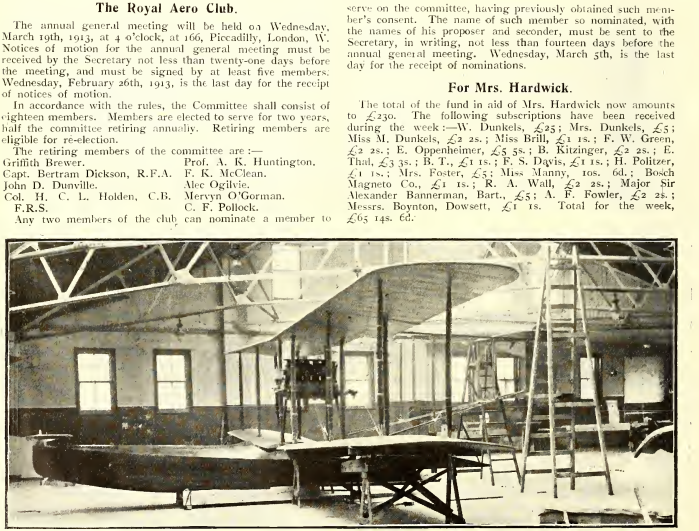
The retiring members of the committee are:—

Griffith Brewer.	Prof. A. K. Huntington.
Capt. Bertram Dickson, R.F.A.	F. K. McClean.
John D. Dunville.	Alec Ogilvie.
Col. H. C. L. Holden, C.B. F.R.S.	Mervyn O'Gorman.
	C. F. Pollock.

Any two members of the club can nominate a member to serve on the committee, having previously obtained such member's consent. The name of such member so nominated, with the names of his proposer and seconder, must be sent to the Secretary, in writing, not less than fourteen days before the annual general meeting. Wednesday, March 5th, is the last day for the receipt of nominations.

For Mrs. Hardwick.

The total of the fund in aid of Mrs. Hardwick now amounts to £230. The following subscriptions have been received during the week:—W. Dunkels, £25; Mrs. Dunkels, £5; Miss M. Dunkels, £2 2s.; Miss Brill, £1 1s.; F. W. Green, £2 2s.; E. Oppenheimer, £5 5s.; B. Ritzinger, £2 2s.; E. Thal, £3 3s.; B. T., £1 1s.; F. S. Davis, £1 1s.; H. Politzer, £1 1s.; Mrs. Foster, £5; Miss Manny, 10s. 6d.; Bosch Magneto Co., £1 1s.; R. A. Wall, £2 2s.; Major Sir Alexander Bannerman, Bart., £5; A. F. Fowler, £2 2s.; Messrs. Boynton, Dowsett, £1 1s. Total for the week, £65 14s. 6d.



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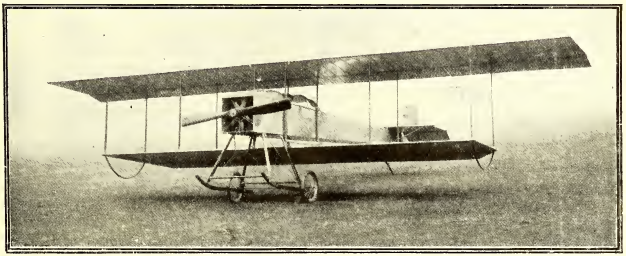
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How to Join the Royal Flying Corps.—(*Continued.*)

BY W. E. de B. WHITTAKER.

The financial side of the question is that which bears most importance with the average candidate for a commission. None of those whose instincts are towards the making of millions would find the Army in any of its branches a fruitful soil for exploitation. The driving of a taxi-cab holds greater promise of profit than does the possession of His Majesty's commission. The reputed glamour of the life of a soldier is a poor consolation when bankruptcy is impending. In the case of the Royal Flying Corps special concessions have been made as to pay and allowances in order to make it possible for officer aviators to exist without a private income. Even so, no special inducements are given to compensate officers for the risk of the life. That risk is presumed to be counterbalanced by the glowing periods of the Secretary of State for War. The charming manner in which he speaks of the gallantry of aviators is quite sufficient reward, or at least that appears to be the assumption.

Paragraph 30 of the guide states that "an officer appointed on probation is conditionally granted an outfit allowance of £40." If requested to resign his commission he will then be liable to return the outfit allowance. The allowance remains the same whether an officer be appointed for continuous service or to the reserve, though the outfit required differs greatly. Paragraphs 34 and 35 point out the difference. They are as follows :—

"34. . . . When posted to a unit of the military wing for continuous service, an officer is required to provide himself with complete uniform, including full dress, but excluding the frock coat.

"35. . . . Officers of the first and second Reserve are required to provide themselves with service dress and mess dress only. The provision of full dress is optional in their case."

The equipment required by an officer in the Military Wing for continuous service is as follows. I add the approximate prices charged by an ordinary outfitter. The outfit quoted comprises the minimum quantity. Such items as are in italics are not required by officers of the first and second Reserves.

Full dress. No sealed pattern has yet officially appeared, so that I give merely approximate prices :—

	£	s.	d.
Tunic	8	8	0
Overalls, per pair	2	5	0
Headdress	2	10	0
Japanned case for same	0	8	0
Web belt and slings	1	12	6
Sash	1	15	0
Sword with bag	3	7	6
Sword knot (gold)	0	14	6
Japanned uniform case	2	7	6
Mess kit—			
Mess jacket	5	10	0
Blue doeskin mess overalls, per pair ...	2	5	0
Blue doeskin mess vest	1	1	0
Service kit—			
Khaki jacket	4	15	0
Khaki trousers	1	10	0
Bedford cord pantaloons	1	15	0
Service cap	0	16	6
Khaki serge great coat	5	0	0
Waterproof	2	12	6
Spiral putties	0	6	6
Sam Brown belt (two braces)	0	18	6
Six white collars	0	7	0
Uniform case	2	7	6
Sam Brown scabbard	0	15	0
Khaki sword knot	0	3	6
One pair brown leather gloves	0	5	0
Total ...	£53	16	0

[A few pounds may be saved by the substitution of cheaper material in certain items.—ED.]

It will be observed in the above list that no clothing is ordered in duplicate, so that the actual expenditure involved would be greatly in excess of the amount stated. Therefore the allowance of £40 does not by any means cover the cost of purchasing a full outfit. It will be realised that there is a great difference between the prices charged by outfitters. A certain proportion of these expenses become in the nature of things an annual charge. Uniform has a habit of becoming shabby at twice the rate of plain clothes. Service outfits are an easy form of extravagance.

The pay of a flying officer, the rank in which all civilian candidates will join, is twelve shillings a day, with an addition of eight shillings a day as flying pay. The following paragraphs show to what further allowances he is entitled :—

"27. . . . Whilst employed or undergoing instruction an officer is usually required to reside in barracks. If not accommodated in barracks, lodging and fuel and light allowances (amounting to about £43 a year for a subaltern) are issued.

"These allowances are not granted to an officer under instruction who resides permanently at the station.

"28. . . . If in barracks, but occupying unfurnished quarters, half lodging allowance (1s. a day for a subaltern) is issuable to enable the officer to provide himself with furniture.

"29. *Field allowance.*—While under canvas, field allowance (2s. 6d. a day for a subaltern) and half lodging allowance will be issuable."

The above allowances are absorbed in the special manner indicated in each paragraph, and do not affect the general expenses of the life.

To show in some manner the cost of living in the Royal Flying Corps I insert here an officer's bill during a recent month. The sums given show the average amount which one is called upon to spend during the month in messing, etc. :—

	£	s.	d.	£	s.	d.
CATERING.						
Lieut. ———						
Daily messing	6	13	6			
Extra messing	0	7	9			
Mess guests' messing ...	0	0	5			
				7	1	8
WINE.						
Wine	2	10	8			
Mess Guests	0	0	3			
				2	10	11
MESS.						
Mess subscription	0	3	6			
Maintenance	0	5	0			
Breakages	0	3	0			
				0	11	6
LIBRARY.						
Library subscription ...	0	2	6			
Cards, Notepaper	0	0	0			
				0	2	6
BILLIARDS.						
Billiards	0	0	0			
GAMES.						
Games and Gardeu ...	0	7	6			
				0	7	6
GENERAL FUND.						
Sundries	0	16	4			
Regent's allowance ...	0	10	4			
Hire Government furniture	0	5	2			
Canteen bill	0	1	2			
				1	13	0
Total				12	7	1

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There is, as is natural, a liability in the Reserve to serve abroad in case of war. When called up for such an emergency an officer receives a gratuity of £50, "and under certain conditions a further gratuity on cessation of service."

One of the qualifications of a candidate for the Royal Flying Corps is that he must possess an aviator's certificate of the Royal Aero Club. Paragraph 31 applies to this, and reads as follows:—"An officer who has obtained the certificate of the Royal Aero Club as aviator is granted the sum of £75. He will be called upon to refund this sum in the event of his failing to complete four years' service in the Special Reserve of Officers of the Royal Flying Corps."

An interesting paragraph is that dealing with the obtaining of the substantive rank by officers who have been gazetted to temporary ranks.

"23. *Promotion.*—He may subsequently be selected for one of the three higher grades of:—

Flight commander.
Squadron commander.
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These higher grades carry the temporary ranks of Captain, Major, and Lieutenant-Colonel respectively. After one year's service in the temporary rank attached to one of the higher grades an officer may be confirmed in that rank if reported to be fully qualified for it."

The phrase "fully qualified" refers to the ordinary promotion examinations and to the possession of a good record. Skill as an aviator carries no weight.

Officers while under instruction receive the pay of their rank in the line, with the addition of 4s. a day flying pay.

(*To be continued.*)

Questions in the House.

January 13, 1913. (Written Answers.)

Royal Flying Corps.

Mr. Joynson-Hicks asked the Secretary of State for War whether, in view of the fact that an aeroplane flown by one pilot may be slightly damaged in landing so that it collapses when flown by another pilot, it is advisable that officers of the Royal Flying Corps other than those at the Central Flying School should in turn fly one and the same machine; and whether he will consider the desirability of arranging that each officer shall have a machine allotted specially to him for the welfare of which he alone is responsible?

Colonel Seely: It is the general custom in the corps for an officer to fly the same machine, but it is not considered advisable to issue any hard and fast rule on the subject.

[The evils of allowing half a dozen pilots to fly the same machine are, of course, obvious, and have been pointed out from time to time in The Aeroplane. It is only to be regretted that verbal answers were not given to Mr. Joynson-Hicks' questions so that he might have had the opportunity of putting a supplementary question as to whether the absence of a hard and fast rule on the subject was due to the scarcity of machines in the possession of the Royal Flying Corps.]

Mr. Joynson-Hicks asked (1) whether the Report of the Committee on Accidents to Monoplanes is ready to be issued; whether it will be available for the use of all those interested in the construction of aeroplanes; why, if it is not now ready, authorised or unauthorised copies of the Report have been placed in the possession of officers of the Royal Aircraft Factory and of officers of the Royal Flying Corps; and (2) whether the Committee on Accidents to Monoplanes has recommended that certain constructional alterations be made in monoplanes already in the possession of the Royal Flying Corps; and whether the expense of carrying out these alterations is to be borne by the Royal Flying Corps, the Royal Aircraft Factory, or by the constructors of the machines?

Colonel Seely: The Report has been received, and is now being considered by the Army Council. I propose to lay the Report in due course. Copies of the Report are in the possession of members of the Committee.

[Copies of the Report are certainly in possession of members of the Committee, but apparently the contents of the Report are fairly well known to a number of people outside the Committee itself, but this is not the chief cause of complaint. The real grievance is that while the Army Council is making up its mind to find time to consider the contents of the Report, those firms who specialise on building monoplanes are at a standstill, not knowing whether monoplanes are to be barred altogether, or whether they are only to be bought if they fulfil some impossible condition evolved by the ingenious minds of scientific "experts" who know little or nothing about aeroplane construction.]

Mr. Joynson-Hicks asked how many officers of the Royal Flying Corps who are classed as trained military aviators have had no opportunities of practising during the past six weeks owing to the fact that the machines belonging to the Military Wing of the Royal Flying Corps have been in use for the purpose of training officers recently appointed to the Flying Corps; and whether a number of these recently appointed officers have been appointed without having passed their course at the Central Flying School in accordance with the intentions expressed in the past by the Secretary of State for War?

Colonel Seely: The answer to the first part of the question is none. With regard to the second part of the question, no officers have been recently appointed to the Military Wing without having graduated at the Central Flying School, but a number of officers who have been selected for the Royal Flying Corps and are on probation are doing their course with the Military Wing instead of at the Central Flying School. These officers will go to the Central Flying School in order to graduate, and will not be appointed finally until they have so graduated. This has been done in order to obtain the number of trained officers we require as expeditiously as possible.

[Colonel Seely's answer to the first part of the question is, of course, literally correct, but the fact remains that quite a number of the best fliers in the Royal Flying Corps have had no practice for quite a long time, though the reason for their being prevented from flying may be other than the fact that the machines they should have been flying have been used for training purposes. The answer to the second part of the question is another of those occasional admissions of maladministration which continual questioning manages to extract even from Colonel Seely. That expensive machines belonging to the fighting squadrons of the Military Wing, and, therefore, machines which are presumably intended to be used if war should break out any moment, should be used for the purpose of training officers who have just managed to scramble through their certificate tests is altogether lamentable.

Machines which are supposed to be used in time of war should be kept in the most perfect condition, and each machine should only be used for practice purposes by the individual officer who will fly that machine in time of war. The idea of taking out machines costing the country anything from a thousand to fifteen hundred pounds, and allowing them to be knocked about by the pupils in their elementary stages is not merely a gross waste of public money, but a menace to the efficiency of the Service, besides endangering the lives of valuable officers who have only attained to their present efficiency at great personal risk. To send one of these first-class pilots up on a high-powered machine that has been banged about during the evolutions of a learner is nothing short of criminal. The reprehensibility of this course of action is all the more obvious when one considers that excellent school machines can be bought from a number of firms at prices well below £500 apiece, and that if a dozen or so were ordered at the time they could be got for about £300 each.]

January 15th, 1913.—(Written Answers).

Royal Flying Corps.

Mr. Joynson-Hicks asked the First Lord of the Admiralty whether, in view of the fact that the list of lieutenants in the Navy is over 100 short, he proposes still further to increase this shortage by appointing naval lieutenants to the Royal Flying Corps; and, if not, how he proposes to obtain sufficient pilots for the permanent establishment of the Naval Wing of th Royal Flying Corps?

Mr. Churchill: Lieutenants of the Royal Navy will be appointed to the Royal Flying Corps in such numbers as may be necessary, due regard being had to the requirements of the Service in other directions. In addition to naval lieutenants, Royal Marine officers and officers of other branches of the Royal Navy, and officers of the Royal Naval Reserve and Royal Naval Volunteer Reserve will be appointed to the Royal Flying Corps, and civilian aviators will be accepted in such numbers as may be necessary, being granted commissions in the Reserve Forces. It is also expected that a certain number of competent pilots may be obtained from warrant officers and men of the Royal Navy and Royal Marines.

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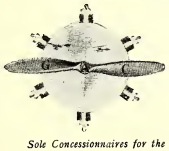
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GREAT BRITAIN.

From the "London Gazette:" War Office, January 10 :—

Special Reserve of Officers, Royal Flying Corps (Military Wing).—Sydney Vincent Sippe to be Second Lieutenant (on probation). Dated January 11, 1913.

From the "London Gazette, War Office, January 17 :—

Regular Forces.—Royal Flying Corps (Military Wing).—The undermentioned to be flying officers and to be seconded : Brevet Major Lionel B. Moss, the South Staffordshire Regiment. Dated October 24, 1912. Captain the Hon. Claude M. P. Brabazon, Irish Guards. Dated December 5, 1912.

FRANCE.

Lieutenant-Aviator Delvert, flying on a monoplane on January 12th from Beaune-la-Rolande to Buc, had a narrow escape from death. When over the village of Etrechy (five miles from Etampes), at a height of 1,500 feet, his monoplane caught fire. Luckily, he managed to land before his planes were destroyed. He continued his journey by train.

On January 12th, at Toulon, M. Charles Nieuport put two Nieuport hydro-monoplanes (100-h.p. Gnome engines) through the necessary reception tests, after which they were accepted by Commandant Fatou, and they are now attached to the naval service.

On December 24th a number of Blériot monoplanes arrived at Casablanca for the use of the Moroccan aviation section. On the following day, Quartermaster Carrus flew one from Casablanca to Bon-Znika and back, a distance of over 100 miles. A day later he flew to Mogador, with Lieutenant Van den Vaero as passenger. They were in the air for three hours, and covered a distance of 220 miles. The machine used was two-seated and was fitted with an 80-h.p. Gnome.

M. de Rose, now a captain, is commanding the aviation centre at Nancy, and a few days ago made an extended flight over the fortifications on a Blériot monoplane (50-h.p. Gnome). He is one of the finest pilot-aviators in the French army.

Quartermaster Carrus took his superior brevet on January 14th by flying on a Maurice Farman biplane over a circuit, Buc-Chartres-Orleans-Buc, maintaining an average height of 3,000 feet.—W.

An 80-h.p. Henry Farman biplane, provided by subscriptions raised in Madagascar, was recently delivered by air to Capt. Cammermann at Villecoublay, piloted by M. Chevillard. The same aviator, on January 14th, at the Buc Aerodrome, gave a demonstration flight in a similar machine before the Havre Aviation Committee, who are presenting this biplane to the army. In spite of a considerable wind, M. Chevillard put the machine through its paces in characteristic style, startling the onlookers with several of those remarkable turns for which he is becoming renowned.

GERMANY.

The dirigible balloon Schütte-Lanz was seriously damaged through descending on some trees at the conclusion of a short flight made on January 12.

The Ministry of Marine has ordered some further experiments with hydro-aeroplanes to be made at Wilhelmshavn in the second half of January.

The aviation exercises to take place near Magdeburg during this week will affect 20 aeroplanes, 33 officers, 10 N.C.O.'s, and 114 soldiers.

The work of constructing the new aeronautical station at Kiel has now begun. A double hangar, capable of rotation, and large enough to accommodate two Zeppelin dirigibles, is being built. Hangars for hydro-aeroplanes are also to be erected.—W.

The Schütte-Lanz dirigible, which passed its duration tests for the German Army on the 18th, was seriously damaged later in the day owing to the elevator cables breaking. After leaving Biesdorf at 2 p.m. the machine was cruising over Potsdam when the accident happened. A strong wind was blowing which carried her over a suburb of Berlin, where the pilot decided to chance a landing, but when about 50 feet up the machine was blown against a neighbouring villa. One of the crew jumped out and broke laundry bones. The rest stuck to the ship and escaped unhurt. The wreck was taken back to Biesdorf the same night, where repairs are to be made, if possible. The wooden frame of the balloon is broken in many places and the exterior envelope badly perforated. The motors have also been damaged. This machine was built during 1909-1911 by the wealthy Herr Lanz, to the designs of Herr Johann Schütte. It has a capacity of 20,000 cubic metres, and has two motors giving a total of 550 h.p. Its carrying capacity is from 16 to 18 persons, and its length is over 400 feet.

ITALY.

To arouse interest among the artizan classes a course of motor mechanics with special reference to aeroplane and dirigible engines has been opened to civilians at the Headquarters of the Air Battalion at Turin. The attendance at the first lecture proved the wisdom of the decision.

A Parseval dirigible has been delivered to the Government and will be taken to its station at Ferrara by air as soon as it is ready to leave Campalto. P-4 is preparing to undertake a journey of considerable length, for which purpose special modifications are being made to her power plant.—T. S. H.

At Milan, on January 16, Lieutenant de Caralio, on a 70-h.p. Gnome-engined two-seated Blériot monoplane, beat the Italian height record by rising to a height of 2,400 metres. In the afternoon Captain Bongiovanni, on an 80-h.p. Gnome-Blériot, flew from Aviano (Milan) to Venice in fifty minutes, later returning to Aviano, where he rose to a height of 2,500 metres. Thus beating his friend's record within a few hours of its accomplishment.

AUSTRIA.

The Ministry of War has ordered twenty biplanes and twenty monoplanes, with motors of from 90 to 120 h.p. All these machines are to be delivered before April.—W.

SWEDEN.

A military aviation school, distinct in every way from the civil school under Baron Cederstrom, at Malmslått, near Stockholm, is to be opened at Axwel under the direction of Captain H. Hamilton (Engineers). Officer pupils will be selected from all arms of the service, and from the Navy. Seven officer pilots to be maintained as instructors, namely, Lieutenant (Naval) Olaf Dahlbeck, Captain Sunstedt, Lieutenants Werner, Bjornburg, Silow, and Junger. The aeroplanes to be used consist of a Sommer monoplane, a Henry Farman biplane, a Bréguet biplane, and several Blériot and Nieuport monoplanes.—W.

BULGARIA.

The following is a list of the aeroplanes at present in the possession of the Flying Corps and stationed at Mustapha Pasha :—Two Blériot monoplanes (single seated, 50-h.p. Gnomes); two Blériot monoplanes (two-seated, pigeon-tailed, 70-h.p. Gnomes); two old Blériot monoplanes sold to Russia and returned from there without motors or wings; two monoplanes, Blériot copies, made in Russia (50-h.p. Gnomes); two Russian-made monoplanes (three-seated, 50-h.p. Gnomes); two Russian-made copies of Nieuport monoplanes (70-h.p. Russian Gnomes) they bear the trade mark in Russian of "Miller, Moscow, Aeroplanes, No. 28"; two Bristol monoplanes, two Bristol biplanes, one Sommer biplane (70-h.p. Renault), one Voisin biplane (70-h.p. Renault), four Albatros biplanes (120-h.p. Argus), five Russian-made Farman biplanes. All the biplanes enumerated are two-seated.—W.

GREECE.

The Farman Brothers send a most interesting account, written by a French aviator, of the work done by their machines with the Greek Army in the Balkan War. The aviator in question agrees that aviation has not given the hoped-for results in this war because of the lack of preparation by the Balkan States. No spare parts, few experienced pilots, and no organisation have been the chief causes. In spite of this, the Farman pilots have done well, even those of little experience having brought valuable reports to the Greek General Staff. Although the country has been bad for flying, breakages have been comparatively slight. The following is a transcript of the work done from December 10th to January 1st.

In Macedonia there were seven Henry Farman biplanes, six with 50-h.p. Gnomes and one with an 80-h.p., but three were not used for lack of pilots. Lieut. Camberos on the 80-h.p. made a reconnaissance from Larissa to Cosani, about 85 kms. (52 miles) at 5,000 ft., bringing back information of the highest value. Lieut. Moutoussis and Lieut. Notaras on a 50-h.p. made a reconnaisance over 140 kms. (85 miles) at about 4,000 ft. over Turkish troops, whose positions they picked out. In various short flights two of the 50's were damaged in landing on bad ground, but repaired on the spot. Lieut. Moutoussis on a 70-h.p. Renault-Maurice Farman flew over Salonika at 5,000 ft., and the machine was afterwards packed and sent to Epirus.

In Epirus, the Plain of Nicopolis, 6 kms. from Preveza, was

used as the "port of attachment" for the aeroplanes. Capt. Barès, a French officer-aviator, was in command, having under him Lieuts. Camberos and Notaras, who learned to fly at the Farman school. On December 10th Capt. Barès and Lieut. Camberos tested the Maurice and Henry Farman biplanes and flew over Preveza. On the 11th, Lieut. Notaras also flew over Preveza, and in the afternoon Lieut. Camberos with a passenger flew to Philippias, 47 kms. (29 miles) away, and brought the useful news. The reconnaissances were continued on the 12th, and on the 14th Lieut. Camberos was attached to the artillery to observe the effect of gun fire. On the 15th Lieut. Moutoussis arrived, and next day a new 70-h.p. Maurice Farman also came in, on which Lieut. Moutoussis made test flights on the 17th, and went out over Preveza.

On the 18th, at 1 p.m., Lieut. Moutoussis started on a reconnaissance over Janina, and came down at Amin Aga Khan, about 48 miles from Preveza, the distance from Preveza to Janina being sixty-five miles. In the course of this flight he threw bombs, which are said to have caused a panic among the population and the Turkish troops. Several of the enemy's bullets hit the machine, piercing the fabric without doing other damage. When Moutoussis returned, Capt. Barès took the same machine up and went out over Janina again—presumably having got the road to Aga Khan. He flew at over 7,000 ft.—being a wise man—where he remained unhit, though many shots were fired at him. One imagines he would not see much from that height. On landing on bad ground he damaged the machine somewhat.

Yet another 70-h.p. Maurice Farman then arrived, and on the 20th Lieut. Moutoussis took it out over Preveza, and, in the words of the letter, "reported some interesting documents." He continued his flights on the 21st, and on Sunday the 22nd he went for a second flight over Janina at 2,100 metres (about 6,700 ft.), and dropped more bombs. In spite of his height, several bullets hit the machine, so that the Turks must have been firing shrapnel from high-angle guns, the high angle probably being obtained by sinking the trail of the gun, or else the pilot over-estimated his height by about 100 per cent. One of the bullets smashed a tail boom, but the machine continued to fly and landed safely at Philippias. Next day Lieut. Moutoussis flew to the base at Nicopolis.

Lieut. Notaras, on the 24th, flew over Preveza on a Henry Farman. Apparently the Greek pilots in Epirus adopted the motto, "When in doubt, fly over Preveza." On the 26th Notaras, on the Henry, and Moutoussis on the Maurice, continued their flights. Next day another new machine was put together, and on the 28th flying over Preveza again went on, the previous pilots now being joined by Lieut. Aviator Adamidis, and they continued to fly on the 29th.

On January 1st Lieut. Notaras, on one of the Maurice Farmans, left Nicopolis at 10.20 a.m., flew over Janina and the fort of Bisani at 7,000 ft., returning at 12.18 with valuable information about the fortifications. As he had to cover at least 60 miles out and 60 miles home one must assume that the wind got up while he was over Janina and blew him home, for the Maurice Farmans do not do an average of 60 miles an hour, good as they are in other ways.

The above record is one of which not only Capt. Barès and the four Greek aviators, but the Farman firm also, may well be proud.

ARGENTINE.

Corporal Fels, with the Argentine pilot, Origone, and the German Lübbe recently attempted to fly from Buenos Aires to Mars del Plata. Fels and Lübbe arrived at Delgrano, but Origone came down on the way and was killed.

FOREIGN NOTES.

France.

M. Levavasseur, the distinguished designer of the ill-fated Antoinette monoplane, is now giving weekly lectures to the pupils who are undergoing theoretical and practical training in aviation at the exposé of the Ligue Nationale Aérienne.

Some interest has been expressed in Great Britain at the supposed great success of a new type of Gnome engine, the 60 h.p., which was spoken of as being fitted in the new single-seated Blériot monoplanes. Actually this is the rating given by the Blériot firm to that engine which we know in England as the 70 h.p. Gnome. A Blériot monoplane so fitted can, when normally loaded, fly at a speed of 68 miles an hour, and rise at the rate of 450 ft. a minute.

The new tail-first monoplane, designed and built by M. Blériot, is highly successful. The pilots who have flown in it as passengers with M. Perreyon speak of it as easily controllable, and as giving a range of vision to the observer unsurpassed in any monoplane. Its speed is slightly higher than that of the normal 50-h.p. single-seater built by the firm.

The Blériot hydro-monoplane recently tried at Bezons is similar in type to the speed-model Blériot exhibited at the Paris Salon in 1911. It has the same tapered fuselage and swallow tail. Three floats are fitted of simple design and high efficiency.

M. Perreyon, on a Blériot monoplane, flew over the palace of Versailles, whilst the deputies were electing M. Poincaré, President of the Republic. The huge crowd awaiting news of the fate of France cheered enthusiastically.

The Doutre firm, which builds Maurice Farman biplanes under licence and fits on them a patent stabilising device, has opened a school at Corbeaulieu under the direction of Martinet. The spectacle of the volatile and brilliant Martinet instilling the first principles of flight into youthful and possibly stupid pupils cannot fail to be amusing, especially on an automatically stable aeroplane.

Mr. Maurice Farman, one learns, has mounted, experimentally on de Dion engine in one of his biplanes, and the results have proved satisfactory. He intends to mount a similar engine in one of the French army machines.

Italy.

1912 went out in a burst of activity in this country. Never do I remember having had such a long list of doings to put into a readable shape for THE AEROPLANE. A few foreigners descend upon us with their products and immediately the native element responds by passing tests, inaugurating new types, doing striking flights here, there and everywhere, bringing forth dirigibles and new business concerns as if they were eggs and teashops.

After the Bristol show flights at Mirafiori came visitors from other trans-Alpine factories to Venice and Milan. From the former city one Chemet on a Borel water-flier crossed to Trieste and returned in the afternoon of December 21st with a high naval officer on board, thus creating a record. A distance of 266 kilometres entirely oversea should satisfy the most exacting purchaser.

At Milan the month has about decided the lot of Tagliedo ground by the forming of a Deperdussin company, which will use the place as a testing ground and be a happy revival of former and more active times. Far too little has been heard of this Milan Aerodrome of late, with the exception of the fine flights of Mr. Deroye. One did hear of the absence from it of that which greases all wheels and which I hope may now become as plentiful there as it is essential.

Over the Turin ground much killing of fatted calves would be appropriate—if it has not actually occurred—the turkey being a seasonable substitute. Both the Chiribiri and the Asteria fixed up several new ticketholders during the month, and the latter has evolved a new monoplane which for rapid dismounting and transport has the tail in two parts (each with its elevator) hinged on to the sides of the fuselage so as to fold up butterfly fashion—parallel to the rudder. The firm are also constructing four machines under license from the Brégquet patents for the military competitions in April. Constant changes in the details of these trials are quite a feature of them and are due to difficulties natural to a young and vigorous policy.

At the other flying centres everyone is, of course, working, more or less, behind the screen, at improvements or novelties for the great occasion, as it appears now that an all-Italian warplane scheme will be worked side by side with the other competitions with good financial compensation to encouragenational invention, though it is now generally recognised that the foreign types will fill the bill best at the present.

At Caproni and Faccanoni's flying ground the first Italian aviatress passed her tests on one of the firm's machines lately. Rosina Ferrario started and dropped her training elsewhere some time ago. The reason complemented her prudence, the present result shows her determination.

Some haggling by the Turin Municipality over land desired by the War Office discloses the latter's intention to transport one or more of the dirigibles, for which no housing is ready, to that town. P.4 and P.5 are ready, the latter only waiting for a shed in which to be inflated, while M.2, like unto M.1 ,except that she has four motors of 125 h.p. instead of two of 250 h.p., is also ready, and the Parseval just delivered at Campalto and destined, we are told, to Ferrara (where I recorded the constructing of a large hangar some months ago), will also be of interest to those who study such things.

To prepare the way for Garros and his emulants a free balloon for scientific observations was sent up from Pavia Observatory in early December and reached, according to the in-

struments in it, the record height of 37 kilometres. The greatest cold was met at the 19th kilometre. What temperature was found afterwards will scarcely interest the common tourist, as rapid movement of any sort at 56 degrees below zero Centigrade would be quite too unpleasant even in a cabin with central heating. The Thermos people have here their chance.—T. S. Harvey.

Belgium.

The Automobile Show at Brussels during this week includes several aeroplanes, among the exhibitors being M. Louis Clément, whose steel-built Hanriot was one of the best things in the Paris Show; the Deperdussin firm; the Bevels, who show the 80-h.p. monoplane, which won the Coupe Pommery, and holds the cross-country record with 850 kilometres (about 520 miles), as well as having taken part in the French manœuvres, its total mileage being 7,500 without a repair; the de Brouckère, a Belgian biplane of good construction; the Hanriot firm; the Donnet-Lévêque; the Gnome Co.; and the Jero, an armour-plated German machine, in which the plating under the seating and controls is guaranteed bullet-proof at 1,000 feet for an added weight of 45 lbs.

Switzerland.

Bielovucic, intent on the emulation of his unfortunate compatriot's flight over the Alps, made a gallant attempt on January 14. He started from Brigue at 3.45 p.m., and rose in circles to a height of over 1,000 feet. Seven minutes after leaving ground he was forced to descend owing to bad carburation. He will make a further attempt shortly.

China.

The Chinese aviator Fung Yue has made his flight, and has passed through the shades to the last Paradise of his Celestial ancestors. Towards the end of December he made a flight in the neighbourhood of Pekin, and was brought down by engine failure into a thicket of bamboo. He was killed instantly.

Ceylon.

Mr. Patridge, who was formerly with Mr. Flanders at Brooklands, sends from Dehiowita some account of Ceylon's first flying exhibition, which took place during December last. The aviators were Messrs. Marc Pourpe and Verminck, the former of whom, it may be remembered, accomplished a double Channel flight last summer, in the course of which he dropped, as he says, "right into the citadel of Dover," and was kindly received by the officers. His treatment by the authorities at Colombo was not quite so sympathetic, for when he returned to his landing-place after a magnificent flight over the harbour, the town—and, incidentally, the fortifications—further flying was promptly stopped until the aeroplane ("La Curieuse" by name), its hangar, and the aviator's own flying-costume had been searched, his cameras seized and his innocent plates developed. It appears that M. Pourpe had interpreted his restrictions a little too generously, and while the police authorities may have been thought over-scrupulous in the performance of their duty, that fault is more forgivable, at any rate, than undue slackness.

Naturally, M. Pourpe was distressed; we hope that it may be some consolation for him to know that many other honourable gentlemen have been in a similar predicament. Fortunately, the affair was settled amicably, and flying was continued after a day or two; but, unfortunately, the aviators' troubles were not yet at an end. When the time arrived to compete for a cup which the "Times of Ceylon," in a very sportsmanlike spirit, had offered, the magneto of M. Verminck's machine (the "Rajah") absolutely declined to evolve sparks; M. Pourpe's magneto was then discovered to be suffering from the same mysterious ailment. Then a tyre burst. Then the petrol was found to be abnormally heavy. Then the crowd—previously enthusiastic—began to lose patience; and when, finally, M. Verminck's magneto, "after copious douches of petrol" (according to a local paper), was coaxed into action, the failing light rendered it unsafe for the unhappy M. Verminck to attempt a thousand-feet vol plané, as the competition terms demanded. This was accomplished, however, early on the following morning by the same aviator, and the cup was won.

Mr. Patridge adds that the machines used were 50-h.p. Gnome Blériots, with the fuselage open behind the passenger seat. He also remarks, with point, that it seems a pity to leave all this pioneer exhibition work in British Colonies to foreign aviators.

The R.F.C. and Cross-Country Flying.

It is with considerable satisfaction that one hears of the postponement of the proposed flight by No. 2 Squadron Royal Flying Corps, from Farnborough to Montrose. The project is far from being a wise one, bearing in mind the time of year, and consequent variation in weather between southern England and mid-Scotland, and the sudden alterations in conditions even at the same place. Such a flight "en escadrille," would certainly be a good, and much-needed, advertisement for the R.F.C., but the risk would be needlessly great, and equally good results could be obtained by organising a flight round the southern aerodromes by any other squadrons capable of putting half a dozen machines in the air at once—if such there be. A flight from Farnborough via Salisbury Plain, Shoreham, Eastbourne, Dover, Eastchurch, Huntingdon, Hendon, and Brooklands to Farnborough would help quite a lot to wake up public interest. It would afford excellent practice to the pilots, the weather on one part of the route would not differ much from the weather for any other part, and the short stages would be practicable during the brief daylight of this part of the year. Presumably the objection to such a flight is that some aerodromes, very sensibly, will not agree to the paltry offer made by the War Office for the housing of military aeroplanes.

The Aeronautical Society.

The fifth meeting will be held on Wednesday, January 29th, at 8.30 p.m., when Brigadier-General D. Henderson, D.S.O., C.B., will preside. Mr. Mervyn O'Gorman, M.I.M.E., A.F.Ae.S., will read a paper, followed by a discussion, on "Stability Devices for Aeroplanes."

The sixth meeting will be held on Wednesday, February 12th, when Sir William White, K.C.B., F.R.S., will preside. Mr. L. Bairstow, A.R.C.Sc., will read a paper on "The Law of Similarity connecting Models and Full-sized Machines."

The council hope that new members will subscribe to the fund which has been opened for the widow of their late fellow-member, Mr. A. Arkell Hardwick. Subscriptions may be sent to the Offices of the Society.

Members are reminded that, under the rules, nominations of candidates for election to the council must be received by the Secretary not later than March 5th, signed by two voters and no more, with an intimation in writing by the nominees that they are willing to serve.

Applications forms for the next election of Associate Fellows, which will take place in March, can now be obtained from the Secretary, and it should be noted that it is not necessary that the applicants should be members of the Society.

In accordance with the educational policy of the Society, lectures to various working-men's clubs on the "Theory and Practice of Aviation" are being given by the Secretary.—Percival C. Cooper, Sec.

M. Surcouf, the eminent French authority on balloons and dirigibles, and head of the Astra firm, has joined the Aeronautical Society as a foreign member.

The Edinburgh Aeronautical Society.

This Society aims at encouraging research by helping its members in carrying out experiments. Any person may be elected a member of the Society provided he agrees to abide by the rules. Ordinary members pay an annual subscription of one guinea; junior members (under twenty-one), half a guinea. Any member who, however, makes use of the Society's flying machines will be liable to a small extra fee. Members will have opportunity of taking part in the construction of aeroplanes, and will have free use of the Society's workshop and also of its literature. The Society will have the advantage of advice from some of the best aeronautical authorities in the country. Anyone wishing to join, or desiring further information, should apply to G. T. Cooper, 41, Drumsheugh Gardens, Edinburgh.

The Kite and Model Aeroplane Association.

This association has been recognised since 1911 as the governing British body in all matters pertaining to kites and model aeroplanes. The association has done much experimental work which has proved of considerable value to the industry at large, and its competitions are well known. During the coming year an international model competition is to be added to the usual list.

The association has also succeeded in forming (with War Office approval) a Man-lifting Kite and Wireless Corps, to be run in connection with the Territorial Army.

In order to continue these useful activities the Association appeals to all those who have the development of aeronautics at heart to join its membership and contribute to its strength.

Leaflets setting forth the objects of the Association may be had by applying to W. H. Akehurst, Esq., 27, Victory Road, Wimbledon.

Monoplanes and Biplanes.

On Wednesday, the 15th inst., Mr. Handley Page, A.F.Ae.S., delivered an interesting lecture to the Aeronautical Society at the Royal United Institute on "The Comparison of Monoplanes and Biplanes with special references to the Stresses in each type." He pointed out that during the past year the relative advantages of monoplane and biplane type has been brought very much to the fore by the fact that all the fatal accidents in this country have been on monoplanes. The lecture was copiously illustrated by lucid diagrams. Mr. Page began by dividing the biplane type into two classes according to the method of bracing, the first being that in which the ordinary cross bracing of each cellule is used, and the second where the cables are anchored to the fuselage on the principle by which monoplanes are stayed. He pointed out that the first type of staying is more applicable to small biplanes than is the second. The monoplane type he also divided into two classes, namely, that with ordinary bracing as used in the Blériot or Deperdussin, and the king-post type as used in the Antoinette and a few others. The lecturer then proceeded to consider in particular cases the loading on each part of the plane, including the simple compression and tension stresses in struts and wires; the shearing force; the bending moment; and the maximum intensity of stress for any portion of the spar. He pointed out that the determining factor in the design of wing spars is the stress causing the bending of the spar rather than that due to simple compression. From a structural point of view the aerodynamical advantages of a monoplane of a very large size would thus be outweighed by the increased weight necessary to give the required spar strength.

He said that so long as structural considerations do not limit the size of spars, or in other ways affect the design, the monoplane will outclass the biplane by reason of the superiority of its lift for a given wing area, plane area section, and angle of inclination. The lift-drift ratio will, therefore, also be better and generally the monoplane will be the more efficient type. In the large monoplane to obtain sufficient strength it is not only necessary to increase the spar area considerably, but also the span of the machine has to be curtailed so as to bring its size within reasonable limits. This entails a larger chord, and, therefore, a smaller aspect ratio. Other things being equal, the monoplane has about 15 per cent. more lift than the biplane, but this advantage may be lost if the aspect ratio has to be reduced from 7 to 4, so on the whole for the largest size of machine the balance would seem to lie in favour of the biplane. As more load is carried a limit would be reached with biplanes, and it would be more economical to employ the multiplane machine.

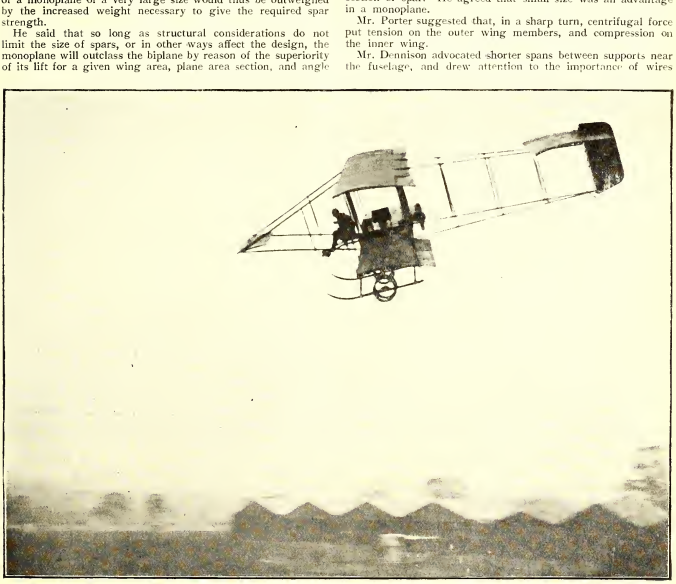
A biplane has greater head resistance than the corresponding monoplane, but the difference is not very great. What one gains in the monoplane by having no struts between the planes is lost by the increased size of the chassis members. For machines of an area up to 250 or 275 sq. ft. the monoplane is the most economical type, but from this point onwards the biplane holds the field.

Mr. A. E. Berriman opened the discussion with some general remarks agreeing, on the whole, with Mr. Page's conclusions.

Mr. Green, of the Royal Aircraft Factory, remarked that it was not safe to generalise, and that Mr. Page handicapped the short span machine by using in his diagrams the same general section of spar. He agreed that small size was an advantage in a monoplane.

Mr. Porter suggested that, in a sharp turn, centrifugal force put tension on the outer wing members, and compression on the inner wing.

Mr. Denison advocated shorter spans between supports near the fuselage, and drew attention to the importance of wires



Mr. Richard Gates making one of his brilliant flights on the Grahame-White biplane at Hendon on Saturday last, taken from the top of No. 1 pylon.

operating on the neutral axes of spars, though he admitted that the secondary strains set up by attaching wires below the spars might reduce the total load on the spars.

Mr. Jones drew attention to the importance of drift strains, and said that the drift of a biplane was 20 per cent. greater than that of a monoplane, though greater drift might be compensated for by degrees of weight.

Mr. Graham Wood said that internal drift wires were dangerous if not adjustable, for as they stretched they allowed the spars to come back, and so the value of the spars as compression members was lost.

Mr. O'Gorman suggested that, in comparing machines, one should take a constant load made up of the total of passengers, petrol, engine, etc., and then compare the result when carried by a monoplane or biplane. Monoplanes always turned out to be more heavily loaded than biplanes for the same performance.

Mr. Low said that he had worked out that the Cody machine was actually more lightly built than a Blériot.

Professor Unwin, the chairman, in closing the debate, said that he would like to see all the known stresses practically tested on an actual monoplane.

The meeting closed with a vote of thanks to Professor Unwin, proposed by Mr. O'Gorman.

The Brighton-Shoreham Aero-Club Dinner.

The Brighton-Shoreham Aero Club held its dinner at the Royal York Hotel, Brighton, on Saturday evening. Mr. Thomas Blair presided in the unavoidable absence of Viscount Curzon, and there were also present: Sir Theodore Angier and Lady Angier, Alderman Barnett Marks, J.P. (Mayor of Hove) and Mrs. Marks, Councillor Trangmar, Col. Massy, Mr. Roger Wallace, K.C., Mr. Daniel Hill, Mr. G. Arthur Wingfield, Mrs. Wingfield, Mr. H. J. Preston, and Mr. H. R. Preston, and many others.

Sir Theodore Angier, in proposing "The Navy, Army and Reserve Forces," made a stirring speech. He alluded to the establishment of aviation departments in connection with foreign armies and navies, and asserted that it was a real live question and that other nations had started and were ahead of us in this respect. We had just opened our eyes to the fact, and the question now remained as to whether the party in power would vote the money to put our services in an equal position with those of foreign powers.

Colonel Massy replied suitably. Mr. Roger Wallace, K.C., also replied.

Mr. Daniel Hill, in proposing "The success and prosperity of the Brighton-Shoreham Aero Club," referred to the Club as of national importance, and said they must all admire the pluck, and energy, and self-sacrifice of those men who had taken this movement in their hands. Throughout the land such clubs should be welcomed as things for the national good. Having paid a tribute to the able way in which Mr. G. A. Wingfield, the Chairman of the Committee, undertook his duties, he coupled the name of that gentleman with the toast.

Mr. Wingfield, replying, stated that much of the success of the club was due to the indefatigable secretary. The club was yet in its infancy, and like all infants, it called out for food—for new members. He thought the Club was a very healthy one indeed, and in one year, handicapped by unpropitious weather, the club had compiled a membership of 200. The secretary had also been successful in persuading twelve first-class aviators to visit the aerodrome, and each of these dealt tactfully with the innumerable criticisms that had been received from persons who expected, for £2 2s., far more than the club could obtain for £100. Furthermore, the club had been instrumental in assisting the well-known aviators, Messrs. A. V. and H. V. Roe, to open a flying school at Shoreham, and had secured pupils for it. There would be plenty of flying at Shoreham, and he thought they could look forward to very pleasant social times during the year 1913.

"It is customary in aviation circles," he continued, "to cry out against the Government because the country is so behind other countries in this industry or means of defence. It is not the fault of the Government, but the people; no Government dare lead its people; it can only follow when the people unmistakably demand it. Then, and then only, is it bound to act in accordance with their wishes. The British lion is always asleep and takes a terrible time to wake up to anything new, and when it does it will see the other nations with a strong third arm, and start roaring when it finds that the Government's hands are already full of matters which have been forced upon them by the people, and want it to shelve everything for aeroplanes and dirigibles."

A prominent official at the offices of the Committee of Imperial Defence a year ago, speaking of aviation, said: "I don't intend England to behave in this matter, if I can help it, as we did over the submarines. In that matter we were very dilatory, and had the country unfortunately been plunged into war in their early days I know it would have gone hardly with us." That was a year ago, and what had been done? Colonel Seely and other officials had said England must be mistress of the air as well as the sea. Still, little or nothing was done.

The motive that inspired the promotion of the Brighton-Shoreham Aero Club was the good of the country: to form a regiment, as it were, of the people of the country, who must join and insist upon aviation in this country. He said that another official at the War Office told him recently he regarded the Brighton Aerodrome as the best from a military point of view. Coast defence must always be the primary object of aviation. This opinion had been endorsed by his Majesty's Secretary of State, who had executed an agreement under which the War Office had agreed to pay for the use of the Aerodrome. That was a fact upon which the proprietors could congratulate themselves. The example set by the War Office was sure to be followed by the County of Sussex, if only in their own interests.

"Imagine what could be done," he said, "if only a small percentage of the population of this county were to join, even if only at the small subscription now payable. With the large income this would produce he could organise further first-class schools for instructions in every branch of aviation, could train members of the Naval Reserve and Territorials as aviators, offer handsome prizes, and generally attract to the county in a short time a very large share indeed of this industry. This surely must be for the benefit of the county. The founders of the aerodrome having laid the foundation for a big industry, which has been approved by the Government, the least we can do is to back them up and support the Committee of this Club in their endeavours to further aviation here. It must at least be good for local trade." Mr. Wingfield, alluding to the bravery of young aviators, who were risking their lives in the interest of a science which would undoubtedly take a very important place in military and naval matters, went on: "The country ought to be ashamed to stand by and see these young heroes—for they are nothing less—struggling to attain something far above mere money, and yet handicapped for want of it, fearful of leaving any moment their wives and little ones unprovided for." Concluding, Mr. Wingfield spoke of the enthusiasm of the Committee and officials, and thanked them for the excellent manner in which they had conducted the business.

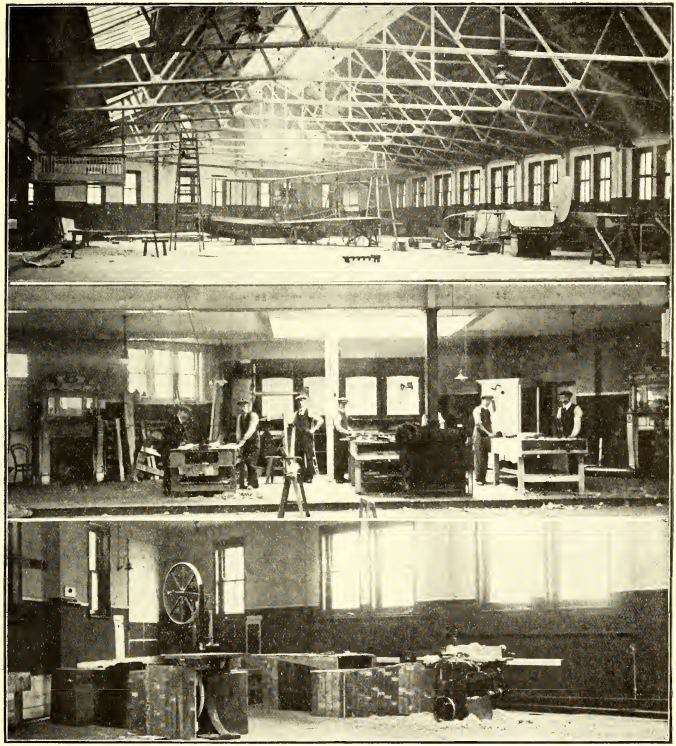
The toast of "The Visitors" was ably proposed by the Mayor of Hove, who spoke of the attitude of the Government towards aviation. He sincerely thought that a club like the Brighton-Shoreham Aero Club (he wished it was the Brighton, Hove and Shoreham) ought to be subsidised, to a certain extent, out of national funds. They read of millions of pounds being spent for causes foreign to the safety of the country, and if they could find millions for those purposes, why could they not find a small sum for the safety of the country?

Mr. W. M. Morison replied to the toast, and "The Chairman" was proposed by Mr. Roger Wallace, K.C.

The Erith Accident.

In the report of the fatal accident to Mr. Macdonald and Mr. England in the Thames on Monday of last week, the machine was described as a Vickers monoplane. The accident happened late on Monday, and as this paper goes to press on Tuesday, it was not known in time to make the correction that the machine was in fact a Vickers tractor biplane. The machine, which had staggered planes, was built for the Vickers school at Brooklands, and Mr. Macdonald had been flying it for about ten days. Under test it showed that it could fly comfortably at 45 miles an hour, but when the engine was tuned up it was found that it developed a speed of 63 miles an hour, this high speed and big variation quite exceeding expectations; so that it was thought advisable to keep it for purposes other than school work, and if it had not come to such an untimely end it would doubtless have done a big performance.

The Sopwith Aviation Company's Works.



The Sopwith Company's Works. Top—General View. Middle.—Carpenters' Shop. Bottom—Some Wood-working Machinery.

As noted recently in The Aeroplane, Mr. Sopwith is now settled in his new works at Kingston-on-Thames, and Mr. Sigrist is hard at work on the new bateboat for the show, and on a fast tractor biplane for Commander Schwann, R.N. The new works were built quite recently for a skating rink, so that the floor is eminently suitable for the assembling of aeroplanes in the most accurate way possible. Also the building is well lighted and heated, so that the men work under almost ideal conditions.

The main assembling shop measures 200 ft. by 70 ft. between pillars, with a good space on each side for work benches. There is also a smaller shop alongside where the "doping" of wings is done free from all dust and interference from any other work, and off the main workshop is a bay for the carpenters' benches. At one end there is a small annexe in which the wood-working machinery is installed. Altogether there are about 30,000 sq. ft. of floor space, which in these days constitutes quite a large aeroplane shop, though one hopes that before very long Mr. Sopwith will find it a great deal too small to tackle the orders in hand.

A visitor to the works cannot fail to be struck by the keenness the men show, and the high quality of the work done by

carpenters and fitters alike. Mr. Harry Hawker, pilot-aviator and British duration record holder, has charge of the fitters, and as a practical flier of the first class he naturally sees to it that everything is done with due regard to safety; while Mr. Sigrist's long experience in keeping in order for Mr. Sopwith the machines with which he has won so many competitions in this country and in the United States is sufficient guarantee that no scamped work will ever leave these shops. Mr. Sopwith himself, whose views on the general design of aeroplanes are now recognised as very sound, keeps a watchful eye on the details also, so that one can have every confidence in the Sopwith machines.

The hut-boat, which is illustrated in this issue, differs from any previously turned out by having a regular hydroplane in front of the main planes with an ordinary tail of Farman type at the back. On the bow of the boat is a front elevator coupled to the tail elevator. It is interesting to note that the boat, which only weighs about 160 lbs., is divided into watertight compartments which have a buoyancy about three times the total weight of the machine, pilot, and passenger, and the bow of the boat is so designed that in the event of the pilot making a mistake and diving into the water nose first the boat itself is bound to bring the machine back to a level keel before it can get under water. The main planes have a pronounced dihedral, so that the tips are well clear of the water, and by placing the engine and tanks high up the centre of gravity is raised above the point usual in this type. It is also worthy of note that the engine is so strongly mounted that everything in the machine, including the boat itself, will have to crumple up before the engine casts loose, and even then it would probably fall clear over the heads of the pilot and passenger if the machine ran nose first into a solid obstruction. Altogether the machine is an uncommonly interesting and promising design.

The King and the Aero Show.

King George has always evinced a great interest in aviation. As Prince of Wales, his visits to the various aero exhibitions were by no means perfunctory. On the contrary, he followed the development of aircraft and the science generally with the keenness of an enthusiast. It is not surprising, therefore, to hear that the Olympia Exhibition, opening on February 14th —which is the first to be held since the Coronation—is to be honoured by his Majesty's gracious patronage.

An Indian Aircraft Factory and Flying School.

[The following letter appeared last month in that progressive paper "The Allahabad Pioneer," and, coupled with the fact that various articles from The Aeroplane, have appeared lately in Indian papers, it shows that Indian interest in aviation is at last awakening.]

Sir,—I understand that it is intended to found an Indian Flying School and that Sitapur has been mentioned as a possible site. May I venture to suggest that the claims of Rurki might be considered? The only advantage possessed by Sitapur is the presence of a number of abandoned barracks and houses which would certainly be useful. As regards a flying ground there are innumerable places in the plains of India where flying grounds can be made at very small expenditure, and at Rurki there is the existing polo ground which could be made available except when polo is being played, and if a larger aerodrome is required, as it soon would be, it is possible to make one five miles long and a mile wide to the south-west of the Rurki Engineering College without cutting a tree so far as I know. Other advantages of Rurki are its great natural and social attractions, which are bound to tell in the long run; its excellent and healthy climate, the presence of the Engineers' and Miners' Workshops, the College workshops and laboratories, with their clever staff, and the opportunity for Government to utilise the Canal foundry and workshops, which are shortly to be closed after all these years of expenditure on them. There are over 300 trained hands in these last workshops, and it seems a pity to let them scatter. The College could undertake experimental research work on the lines of the National Physical Laboratory at Teddington. India has at the present moment an unrivalled opportunity for doing the Empire a signal service by the establishment of an Indian Aircraft Factory and Flying School on the lines of the Royal Aircraft Factory at Farnborough, where there are already, to the best of my recollection, over 300 workmen employed in the erection and repair of aeroplanes. I need hardly dwell on the importance to the nation of the speedy development of the Royal Flying Corps. The fact is now universally recognised. The present moment is especially opportune, inasmuch as the aeronautical industry is awake to the urgent necessity for improving the existing type of aeroplane and the experiments to this end, which are being carried out at Farnborough, and which could be carried out more easily in India with its almost ideal flying conditions, would be most valuable. The first step, however, should be to import a number of machines of existing types, preferably in communication with Mr. Mervyn O'Gorman, the Superintendent of the Royal Aircraft Factory at Farnborough, who would probably be able to spare one or two specimens of B.E.2 or a later type, and, in addition, a few trained mechanics, some of whom should be pilots if possible. By the time these arrive from England the necessary sheds and buildings could be run up. There is, however, no time to be lost, for every year appears to be increasing the lead of France and Germany.—H. S. Wildeblood (Superintending Engineer, P. W. D., Meerut).

The Death of Mr. Harold Barlow.

We regret to announce the demise of Mr. Harold Barlow, who generously presented such handsome prizes for the Aerial Derby at Hendon last year. It will be remembered that Mr. Barlow purchased a Nieuport monoplane and a small Grahame-White biplane from the Grahame-White Aviation Co., and also bought a 70-h.p. tandem Blériot, on which machine he flew as a passenger with Mr. B. C. Hucks from Paris to Hendon, having a very adventurous voyage in very bad weather. This machine was afterwards flown all over England and Scotland by Mr. Hucks, and Mr. Hucks has now purchased it from Mr. Barlow's executors for the tour he is shortly making in England.

Mr. Barlow's decease is greatly to be regretted as this country is too short of wealthy sportsmen who are willing to expend money on aviation as he did.

Exhibition Flying at Hendon.

Visitors to Hendon on Thursday last, as usual, were not disappointed. Many machines were out in the morning, and in the afternoon, although rain threatened—and finally carried out its threat, Messrs. Desoutter and Manton gave several excellent flights, passenger and otherwise.

Saturday, in spite of the unpromising weather, saw really a fine exhibition of flying, nine pilots turning out in the course of the afternoon and all flying well. Probably the surprise of the day was the fine flying of M. Baumann on the 35-h.p. Caudron. For something like a year M. Baumann has been acting as mechanic to the W. H. Ewen School, and more recently as assistant instructor, so he has had but little flying himself. On Saturday, however he showed himself to be quite in the best class, flying high and steadily and coming down with a fine straight glide. Mr. Lewis Turner, on the 60-h.p. Caudron, was flying well, but had engine trouble which put him out of action fairly early in the day. Mr. Brock, on the 35-h.p. Deperdussin, also suffered from engine trouble, and in bringing his machine back to the shed the Deperdussin crew adopted the novel expedient of lifting it over two fences to avoid dragging it through the heavy mud at the usual outlet to the flying ground.

Mr. Harold Blackburn gave an exhibition of banked diving turns on the Blackburn monoplane, though they were somewhat alarming to those who knew, on account of the way in which he brought the machine up to the turn with its tail down. He also gave many experienced pilots the impression that he has a tendency to overbank, though presumably he knows more about the limitations of the machine than those who have not flown it.

M. Verrier, testing a brand new Maurice Farman for the Flying Corps, took up several passengers, among them Mr. Gordon Bell, with whom he did his usual extraordinary turns, and introduced a new trick by coming down into the field between the railway bank and boundary fence, so that the machine was hidden by the fence and then suddenly appearing over it like a Jack-in-the-box at an appallingly steep angle.

On the Grahame-White biplane, Mr. Gates took his usual week-end relief from management by turning out as a fancy flier, and, as a matter of fact, few can beat him in the handling of the Grahame-White biplane. Mr. Manton took up several passengers, and Mr. Chetwynd also took on the same machine performing well. Mr. Desoutter, on the old Gordon-Bennett Blériot, gave his usual excellent exhibition. Some of his landings struck one as rather peculiar till one discovered he was practising the Hamel method of landing without running along afterwards, with the result that he did some extremely fine bounces. He will probably find it almost impossible to cultivate the standstill landing on this machine, because the machine has the old flat racing wings instead of the cambered wings of the ordinary Blériot.

The Week's Work.

MONDAY, January 13th.

R.F.C., Central Flying School.—Clear, sharp frost, very slight easterly wind. On Avro 406, Air Mechanic Higginbottom with Ldg. Seaman Bateman over to gallops, then Ldg. Seaman Bateman started for brevet, but forced to land owing to plug trouble. Air Mechanic Higginbottom flew machine back to sheds, with engine missing, and after change of plugs took up Air Mechanic Carden for 15 mins. to 1,200 ft., then with Air Mechanic Thake 15 mins. to 800 ft. On Avro 404, Air Mechanic Higginbottom 3 mins., taking machine over to Ldg. Seaman Bateman, who then took his brevet in very good style, 18 mins. first half, reaching 900 feet, and 20 mins. second half. Then Air Mechanic Higginbottom with Ldg. Seaman Bateman 3 mins., Capt. Fulton, R.F.A., 5 mins. On Maurice Farman 403, Ldg. Seaman Prickett 14 mins.; Lieut. Longmore, R.N., with Asst. Paymaster Llderdale, R.N., 18 mins. On Maurice Farman 411, Lieut. Longmore with Asst. Paymr. Llderdale 13 mins., with Air Mechanic Collis twice, 23 mins. each. On Maurice Farman 415, Engr. Lieut. Randall, R.N., with Ldg. Seaman Daniels 10 mins. and 21 mins. alone. Major Ashmore arrived on new Maurice Farman 425 from Farnborough. On Short 401, Ldg. Seaman Brady for brevet. Had already taken first half, but did the whole lot again, reaching over 1,000 ft.; 15 mins. first half and 17 mins. second half. Both Brady and Bateman were observed by Capt. Fulton and Lieut. Longmore.

R.F.C., Farnborough.—Very cold north-easterly wind, moderate; very misty, good for flying. Early, Mr. de Havilland making short flights on new "warplane." Looks a fast machine. New pilot of Aircraft Factory out doing straights on old B.E.2. Later Mr. de Havilland on B.E.2, taking passengers for long flights. Major Raleigh had new Maurice Farman 302 out doing straights. When landing, through some unknown cause, carburettor caught fire, totally wrecking machine, pilot escaping unhurt. On Bréguet 213, two flights, one with Capt. Beor as passenger, then Capt. Beor doing straights. Then Lieut Chinnery took over machine to do straights, but in landing broke propeller and front skid. Rather an unlucky day for No. 4 Squadron. Later Major Raleigh, on Bréguet 210, made four fine flights, taking passenger each time. All No. 2 Squadron machines being overhauled before proceeding to Montrose.

Hendon.—At W. H. EWEN SCHOOL, Mr. Jones, an Australian joined school.

Brooklands.—At VICKERS SCHOOL, Mr. Barnwell tests on biplane. Capt. Salmond circuits in good style. Mr. Knight testing petrol adjustment, and then Capt. Salmond circuits in good style. Mr. Knight testing petrol adjustment, and then Capt. Salmond again for circuits. Getting into backwash of another machine, he landed rather heavily, damaging propeller, chassis, etc. Fog prevented further flying.

At BRISTOL SCHOOL, Mr. Merriam with Mr. Neville and Lieut. Blatherwick, Mr. Bendall alone and with Mr. Archer, Lieut. Crawford-Kehrmann, Capt. Rickards and Lieut. Shekleton circuits. Capt. Rickards and Lieut. Shekleton alone.

At DUCROCQ SCHOOL, Mr. J. Alcock circuits in fog.

At PASHLEY BROS., Mr. E. Pashley on Sommer about 200 ft. above mist, track quite invisible.

Dover.—Shortly after midday Commander Samson, R.N., and passenger on 100-h.p. Short, Lieut. Spencer Grey, R.N., with passenger on Deperdussin, and Capt. Risk, R.M.L.I., with passenger on 100-h.p. tri-pe Short, flighted, also Lieut. Hewlett, R.N., on 70-h.p. Henry Farman. Mr. McClean, after circling aerodrome, returned, without alighting, to Eastchurch. Several trial flights were made by Lieut. Spencer Grey and Lieut. Hewlett, latter taking up Mrs. Marley, wife of Capt. Marley (Sec., Dover Aero Club).

Salisbury Plain.—At BRISTOL SCHOOL, M. Jullerot for trial. Wind too strong.

TUESDAY, January 14th.

R.F.C., Central Flying School.—Sharp frost, misty morning, lifting about 10 a.m. Ground covered with snow. Fresh east wind. On Maurice Farman 403, Asst. Paymaster Llderdale, R.N., took brevet in good form in 60 mins.; Lieut. Longmore, R.N., with passenger, 5 mins.; Major Ashmore, 30 mins.; Assist. Paymaster Llderdale, 32 mins. On Maurice Farman 411, Lieut. Longmore with Air Mechanic Collis, 12 and 39 mins., with Engineer Lieut. Randall, R.N., 8 mins. On Maurice Farman 415, Engineer Lieut. Randall, 50 mins. On Maurice Farman 418, Major Ashmore, 12 mins.; Lieut. Longmore, 5 mins. On Short 401, Major Gerrard, R.M.L.I., 10 mins. alone and with Mr. Gerrard (his brother), 10 mins. All ranks under instruction at school left about midday for respective headquarters.



M. Verrier performing, with Mr. Gordon Bell as passenger, at Hendon on Saturday.

R.F.C., Farnborough.—Moderate south-easterly wind, very misty early morning. Sun through about 10.30 a.m. On Maurice Farman 266, Lieut. Herbert two good flights, one with Sergt. Mead for 10 mins. On Maurice Farman 215 Capt. Dawes 15 and 17 mins., with Air Mechanic Wilson for 10 mins., Lieut. Herbert with Lieut. Martyn for 8 mins., then with Capt. Beattie for instruction. Later Capt. Beattie rolling alone. On Bréguet 210 Major Raleigh with Capt. Board 10 mins., Lieut. Maclean for 15 mins., Lieut. Chinnery 15 mins., and Capt. Beor 30 mins., reaching good altitude. Mr. de Havilland out early on warplane, rolling and short flights. Later out on new B.E. type staggered plane machine; also on B.E.2, with passengers. In morning and afternoon Sergt. Hunter out on Bréguet 211, making two good flights alone and then taking Sergt. Kemper, Sergt. Wright, once each, also Air Mechanics Ankrett (two flights), Searle, Chambers, Ledger, Thomas, Morgan, and Hemming (one flight each). Good day's work for first time on machine with 100 h.p.

Hendon.—At DEPERDUSSIN SCHOOL, No. 4 tested by Mr. Brock. Mr. Whithouse circuits. Mr. Valazzi straights on No. 3. Later, Messrs. Valazzi and Scott straights on No. 3. Lieut. Hordern rolling on No. 2 taxi. Mr. Whitehouse started for brevet but stopped by fog.

At BLERIOT SCHOOL, in afternoon, Mr. Slack tried out No. 2 after repairs.

Brooklands.—At BRISTOL SCHOOL Mr. Merriam test. Later with Mr. Neville and Lieut. Blatherwick, latter pupil then first circuits alone. Mr. Bendall with Mr. Archer and Lieut.

Kehrmann and Lieut. Shekleton. Capt. Rickards eights. Mr. Merriam with Mr. Hall and Lieut Kehrmann.

At Ducrocq School, M. Ducrocq circuits in good style. Mr. J. Alcock and Mr. McAndrew circuits. Latter passed for brevet. Mr. J. Alcock for 10 mins. with banked turns, right and left.

Salisbury Plain (Bristol School).—Mr. England trial.

Dover.—About 4.15 p.m. Lieut. Hewlett, R.N., left for Eastchurch in high wind. Lieut. Spencer Grey, R.N., also up for short flight.

WEDNESDAY, January 15th.

R.F.C. Central Flying School.—Very strong easterly wind, sunny early, but heavy rains later. No flying.

R.F.C. Farnborough.—Raining hard till about 9.15 a.m., then cleared up for short period; strong south-westerly wind. Mr. de Havilland on B.E.2, several fine flights, getting much bumped about. Rain stopping further flying. M. Verrier arrived from Hendon on another new Maurice Farman.

[Something wrong with R.F.C. weathercocks?—Ed.]

Hendon.—At W. H. Ewen School, weather still too bad for out-door practice. Mr. Harry Stewart, new pupil, joined.

Brooklands.—At Vickers School, Mr. Barnwell circuits on No. 7 mono. Too windy for pupils.

At Bristol School, Mr. Merriam for trial.

THURSDAY, January 16th

R.F.C., Central Flying School—Clear and frosty, fresh easterly wind. All machines and officers and mechanics, etc., of the School Staff formed up and photographed about 12.30 p.m. On Avro 406, Capt. Fulton, R.F.A., 5 mins. On B.E. 417, Capt. Salmond 9 mins. On Short 401, Major Gerrard, R.M.L.I., 5 mins. On Henry Farman 420, Major Gerrard 10 mins.

R.F.C. Central Flying School.—Clear and frosty, fresh wind up above, between 25 and 30 m.p.h. Mr. de Havilland testing 204, B.E. type. Then on B.E.2, making flights all day, taking passengers. M. Verrier arrived from Hendon on another new Maurice Farman, and later putting last two new machines through Aircraft Factory test, flying well in rather strong wind. On Maurice Farman 215, Lieut. Herbert 10 mins., with Lieut. Martyn 24 mins., with Mechanic Weare 15 mins. Then Lieut. Martyn two fine flights of 10 mins. each. Capt. Darbyshire long flight on B.E. type 206, reaching a good altitude. On Bréguet 211, 100-h.p. Gnome, Sergt. Hunter put in good morning's work, taking following for passenger flights: Acting Adjutant Lieut. Mackworth, Lieut. Maclean, Lieut. Chinnery, Sergt. Wright, and Air Mechanics



Mr. Harold Blackburn, who has been startling Hendon lately with his banked turns on the Blackburn monoplane.



Mr. Marcel Desoutter, the popular young Blériot pilot, in his Warren helmet.

Ankrett and Jenkins, also Sergt.-Major Thomas, who is himself a pilot of no mean ability. In afternoon No. 2 Squadron and No. 4 Squadron played the return hockey match, resulting in a draw of 3 goals each.

Hendon.—At Graham-White School, Messrs. Manton and Desoutter giving fine exhibitions.

At W. H. Ewen School, under M. Baumann, Mr. E. T. Prosser on mono. Mr. H. Jones first run on same. Mr. L. Turner good exhibitions on 35-h.p. Caudron, and M. Baumann on same.

At Blackburn School, tests by Mr. H. Blackburn, Messrs. Buss and Glew 40 mins. each, and Mr. Morris 20 mins.

At Deperdussin School, Mr. Brock two circuits on No. 4. Mr. Scott one circuit, but had to come down owing to fog. Lieut. Hordern rolling on No. 3 brevet.

At Blériot School, fine in morning. Several pupils out, including Messrs. Reilly and Clappen and MM. Teulade and Desoutter, all good progress.

Brooklands.—At Vickers School, in afternoon Mr. Barnwell circuits on mono. No. 7, but very windy.

At Bristol School, Mr. Bendall with Lieut. Crawford-Kehrmann, Mr. Merriam with Mr. Neville, Mr. Archer Lieut. Kehrmann, and then alone over Byfleet. Mr. Bendall with Lieut. Maclean, and having disturbed a flock of partridges managed to "secure" a couple with his propeller, with obvious results to the latter.

Dover.—Lieuts. Courtney, R.N., and Shepherd, R.N., arrived carrying spare parts for Capt. Risk's triple Short, afterwards returning to Eastchurch in high wind.

Salisbury Plain.—Bristol School, Messrs. Jullerot and England trials; gusty. Lieut. Vernon took his certificate in 20-mile wind. M. Jullerot tested new biplane.

FRIDAY, January 17th.

R.F.C. Central Flying School.—Fine, clear and calm; bright sunshine in forenoon; dull and cold in afternoon. On Avro 404, Capt. Fulton, R.F.A., with Sergt. Jarvis, 30 mins. On Avro 406, Capt. Fulton with Air Mechanic Baldock, 15 mins; with another air mechanic under instruction on practice ground, 70 mins. Air Mechanic Higginbottom with Air Mechanic Bosworth at over 1,000 ft., 15 mins.; with Air Mechanic Smyrk, 5 mins. On Maurice Farman 403, Air Mechanic Collis 28, 20 and 35 mins; Lieut. Longmore, R.N., with Air Mechanic Savill, 8 mins.; with Ldg. Seaman Bateman, 6 mins. On Maurice Farman 411, Lieut. Longmore with Air Mechanic Collis, 28 mins.; with Sergt. Stafford, for instruction, 20, 23, 35 mins.; with Ldg. Seaman Bateman, 18 mins. On Maurice Farman 415, Asst. Paymaster Lidderdale, 20 mins.; Engineer Lieut. Randall, R.N., 12 mins.; Master Mechanic T O'Connor, 17 mins. On Maurice Farman 425, Lieut. Longmore with Capt. Paine, 27 mins. On B.E.416, Capt. Salmond 10 and 6

mins. alone, with Petty Officer Grady 70 mins., with another passenger 20 mins.; Capt. Fulton, 10 mins. On B.E. 417, Capt Salmond 10 and 15 mins., with Petty Officer Grady 35 mins., with Sergt. Rigby 25 mins. On Short biplane 402, Major Gerrard, R.M.L.I., with Capt. Lithgow, R.A.M.C., 5, 10, 45 and 25 mins. A fresh batch of officers, N.C.O.'s and men arrived this day for course of flying, mechanical instruction, etc.

R.F.C., Farnborough.—Strong westerly wind, very bumpy, sun shining. M. Verrier on new Maurice Farman with passenger giving good exhibition. Mr. de Havilland several flights on B.E.2, with passengers. On B.E. type 206, Capt. Darbyshire long flight alone; with Capt. Colclo (Grenadier Guards), 10 mins.; Lieut. Lawrence with Lieut. A. Christie, and with Colour-Sergeant Parker (Grenadier Guards); Lieut. Joubert de la Ferté one flight alone. On Bréguet 210, Major Raleigh 8 min., then Sergt. Hunter took over, giving passenger flights to Capt. Board, Lieut. Chinnery, Staff-Sergeant Richardson, and Sergt. Latimer. Sergt. Hunter is said to control the different machines he is put on to very well. It will be seen by the record that many members of the R.F.C. are quite willing to entrust their lives to him, and he apparently deserves his badge as pilot. On Maurice Farman 215, Lieut. Herbert 8 mins., with Lieut. Parker (Connaught Rangers) 26 mins. at 1,500 ft. Lieut. Martyn good flight of 12 mins. Lieut. Carmichael arrived from Lark Hill on Maurice Farman 216; time, 50 mins. On Bréguet 213 Capt. Board and Lieut. Maclean rolling. Capt. Beor rolling and short flights.

Hendon.—At GRAHAME-WHITE SCHOOL.—Afternoon calm, and pupils made most of it. Lieut. Power straights with Mr. Manton, on No. 7 machine; Mr. T. H. Baycito good rolling practice on 4B.

At W. H. EWEN SCHOOL.—Mr. L. Turner and M. Baumann both on 35-h.p. Caudron. After lunch pupils got in useful work. Under M. Baumann, Messrs. E. T. Prosser, H. J. Torr and H. Jones were all straights on mono. No. 2; Mr. L. Turner on 35-h.p. Caudron test, and Mr. Lawford straights. Mr. L. Russell went through brevet tests in splendid style, flying eights at 350 ft. and making perfect landings. Interesting to note, this is the first brevet this year at London Aerodrome, and that first brevet in this country in 1913 was taken at Brooklands also on 35-h.p. Caudron.

At BLACKBURN SCHOOL.—Test by Mr. H. Blackburn; straights by Mr. Foggin.

At BLERIOT SCHOOL.—In afternoon MM. Gandillon, R. Desoutter, and Mr. Clappen all out. Lieut. E. Conran left school for the Plain for duty with R.F.C.

At DEPERDUSSIN SCHOOL.—Mr. Brock tried wind on No. 4, but too strong for pupils. Later, Mr. Whitehouse circuits and eights on No. 4. Mr. Valazzi and Lieut. Hordern straights on No. 3. Mr. Scott on circuits No. 4.

Brooklands.—At VICKERS SCHOOL, Messrs. Barnwell and Knight flying in afternoon on No. 7 and No. 5 monoplanes respectively. Mr. Barnwell with passenger.

At BRISTOL SCHOOL.—Mr. Merriam testing; later with Lieut. Maclean. In afternoon with Lieut. Crawford-Kehrmann. Mr. Bendall alone, and with Mr. Archer and Lieut. Maclean. Mr. Neville straights. Messrs. Merriam and Bendall both on Bristol E.N.V. tractor.

At PASHLEY BROS.—Mr. E. Pashley testing new tanks.

Dover.—About 3.15 p.m. Capt. Risk, R.M.L.I., flying strongly on triple Short, left for Eastchurch, and later on Lieut. Spencer Grey's 70-h.p. Deperdussin left by road, having been damaged in high wind in early hours of Wednesday morning.

Salisbury Plain (Bristol School).—Mr. England trial. Lieut. Littleton passed for certificate, observed by Major Brooke-Popham and Major Boyd-Moss. M. Jullerot with Mr. Tower. Lieut Vaughan alone. Mr. England with Mr. Tower, and to Upavon with Lieut. Littleton. Prince Caracuzène flew to Upavon and back on 80-h.p. with passenger.

SATURDAY, January 18th.

R.F.C. (Central Flying School).—Slight easterly wind, very misty. On Avro 404, Capt. Fulton, R.F.A., with Sergt. Ervis, under instruction on practice ground 35 mins., with Lieut. Holt 5 mins., Lieut. Rathborne 5 mins., Lieut. Read 15 mins., Lieut. Small 10 mins., and Capt. Mellor 10 mins. On Maurice Farman 403, Air Mechanic Collis 48 mins., for brevet, to over 1,000 ft., and did first half, flying time 20 mins. On Maurice Farman 411, Lieut. Longmore, R.N., with Mr. Evill 6 mins., with Capt. Miller 12 mins., with Lieut. Boyle 8 mins. On B.E.416, Capt. Salmond with Lieut.



Leading Seaman Prickett, one of the most recent pilots to take his certificate at the Central Flying School. The quality of the lower deck pilots trained at Upavon has been exceedingly good, many of them flying the fast Avros.

Arthur 15 mins., with Lieut. Burroughs 7 and 45 mins. On Henry Farman 420, Major Gerrard, R.M.L.I., 7 mins.

R.F.C., Farnborough.—Moderate easterly wind, very misty; cleared up about 9.30 a.m. Mr. de Havilland on 204 and B.E.2, taking passengers, Capt. Darbyshire on B.E.206; long flight at good altitude. On Bréguet 210, Sergt. Hunter with Lieut. Chinnery 10 mins. On Bréguet 211, Lieut. Shephard two flights of 15 mins. each. On Bréguet 213, Capt. Board and Lieut. MacLean rolling. Capt. Beor straights. Major Raleigh two flights, one with Sergt. Hunter as passenger. Airship "Gamma" out for long flight.

Hendon.—At GRAHAME-WHITE SCHOOL, Messrs. Gates, Manton, Cheeseman and Desoutter excellent exhibition flights.

At AIRCRAFT CO., M. Verrier, on new Maurice Farman, doing wonderful things with passengers.

At W. H. EWEN SCHOOL, Mr. Lewis Turner alone and with passengers on 60-h.p. Caudron. M. Baumann splendid exhibition flight on 35-h.p. Caudron.

At BLACKBURN SCHOOL, Mr. A. Blackburn exhibition flight on school rolling machine for 15 mins.

At DEPERDUSSIN SCHOOL, Mr. Whitehouse for brevet and passed in good style, flying at 300 ft. or more. Landings very good, pulling up first time within three yards of observers. All more creditable in stiff wind.

Brooklands.—At VICKERS SCHOOL, fog in morning. In afternoon Mr. Barnwell flying monos. Nos. 5 and 7 alternately, testing for relative weather capacities.

At BRISTOL SCHOOL, Mr. Merriam, with Lieut. Crawford-Kehrmann, ran into Mr. Pashley's Sommer in fog, both machines being very completely wrecked. Mr. Bendall earlier for a test. Mr. Merriam out in afternoon for test on Bristol tractor, but conditions too bad for pupils.

At PASHLEY BROS., Mr. E. Pashley out on Sommer which, with new tail adjustment, was lifting well. On landing, unfortunately, collided with a Bristol in fog, owing to pupil on latter being a trifle late in using rudder. No one hurt, both machines wrecked; Shoreham flight postponed.

Brighton Shoreham.—At AVRO SCHOOL, Mr. Simms on several times during day. Messrs. Batty-Smith and Wynne-Roberts rolling. Mr. Gaskell straights.

SUNDAY, January 19th.

Hendon.—At BLACKBURN SCHOOL.—Test by Mr. H. Blackburn. Mr. Bass to mins., circuits and eights. Dr. Christie straights, 25 mins.; stopped by weather.

Brooklands.—At VICKERS SCHOOL, Capt. Wood and Messrs. Barnwell and Knight flying No. 5 mono. in morning. Rain and wind later.

At Bristol School.—Mr. Merriam with Mr. Archer, Lieut. Kehrmann and Blatherwick. Messrs. Lane and Neville straights.

Virtue Rewarded.

As The Aeroplane goes to press a telegram arrives announcing that the War Office has given orders for five more Gnome Avro biplanes, making nine in all. Congratulations on well-deserved success.

The I. C. S. Blériot.

On January 28, Colonel Seely is receiving a deputation, introduced by Lord Desborough, on behalf of the students of the International Correspondence Schools, who have subscribed to present a Blériot monoplane of the latest type to the War Office.

Mr. Noël's Trip.

Mr. Louis Noël, who will be greatly missed from Hendon, has gone to Switzerland with the 70-h.p. Farman, the hydro-aeroplane on which Mr. Grahame-White flew the Channel, and on which he has flown so well at Hendon since. Whether Mr. Grahame-White intends to fly it at San Moritz, or on the Swiss lakes, is not yet announced, but there are rumours of it and Mr. Noël going to Monaco later on. The change to a decent climate and fresh scenery will do Mr. Noël good, for he has been far from well lately. May he return in due course thoroughly fit. All will be glad to see him again.

An Opportunity for Pupils.

It is now fairly certain that the War Office ban on monoplanes will be removed before many days are past, and though at present biplanes are more in favour than monoplanes in the Royal Flying Corps, it is obvious that a number of monoplanes must be used, especially single-seaters for fast work, and, therefore, officers who intend to join the Flying Corps will do well to learn to fly monoplanes as well as biplanes. The Vickers School at Brooklands offers special facilities in this direction for the school equipment includes slow, medium, and fast monoplanes, so that the learner gains experience progressively. The latest addition to the stud, the 100-h.p. two-seater, is also available to give pupils experience in the air, and, in charge of Mr. Barnwell, the school manager and instructor, they are sure of the right kind of experience which will turn them into steady fliers and not aerial acrobats. Officers who have already taken their certificates on biplanes can obtain special terms for monoplane tuition by applying to Captain H. F. Wood, The Aviation Department, Vickers, Ltd., Broadway, Westminster.

Some New Accessories.

Aeros, Ltd., is about to place on the market two instruments of unusual interest. The first is a speedometer, working upon a new and ingenious principle. Two tubes, open at their outer ends, lead from the two wing-tips to a couple of very sensitive metal drums similar to those of an aneroid barometer. A dial pointer, actuated by both drums in common, gives a reading governed by the average pressure within the drums. Thus, whether the aeroplane is flying straight or circling, the dial should give an accurate estimation of the machine's speed, relatively to the air.

The other instrument is an inclinograph, which will be marketed in various forms, the most complete of which will consist of two swinging arcs of metal, measuring respectively the lateral and horizontal inclination of the machine. Undue oscillation is prevented by a pair of magnets. The recording is performed electrically, so that the chart, with its two pens, may be before the pilot's eyes, while the rest of the apparatus may be placed in any convenient position on the machine. The firm is also marketing a very neat and workmanlike compass for aeroplanes—luminous, for night work.

Aeros, Ltd., is also devoting its attention to the improvement of the aviator's more personal equipment. The latest production in this line is a pair of non-inflammable goggles to button on to the Warren safety helmet, dispensing with the need for straps. There is also a similar pair of goggles in which the celluloid window is replaced by one of chlorophyll glass, which will allow the aviator to fly against the most brilliant sunshine without being dazzled. Finally, there is a pair of leather gloves whose most attractive attribute is that they may be soaked repeatedly and dried before the fire without losing their flexibility.



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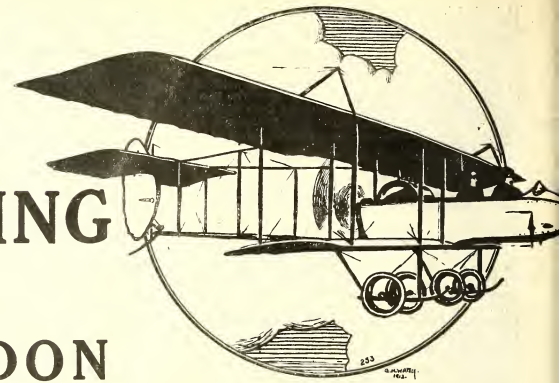
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Easter Arrangements.

The 4th London Aviation Meeting will be held during the Easter Holidays, Friday, March 21st, to Easter Monday, March 24th. Speed and Altitude Competitions for Prizes will take place each day, weather permitting. Further particulars will be announced later.

Flying Race Meetings

Will be held every Saturday and Bank Holiday throughout the forthcoming Season. Arrangements will be announced from time to time in the Aeronautical and daily and evening Press.

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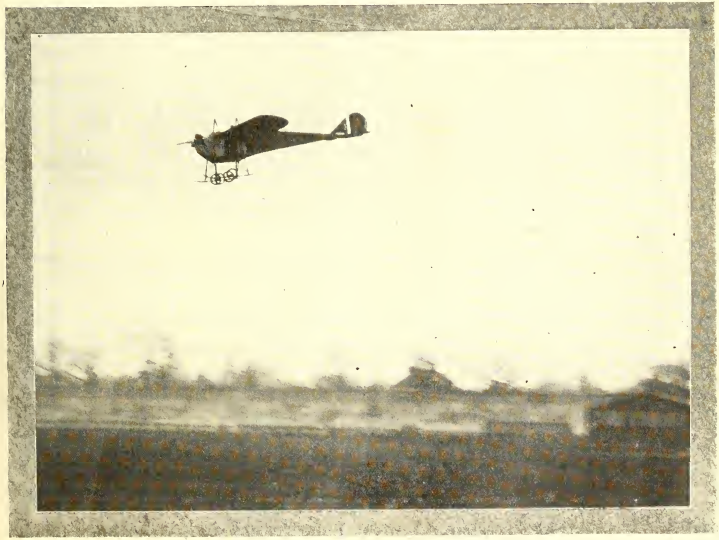
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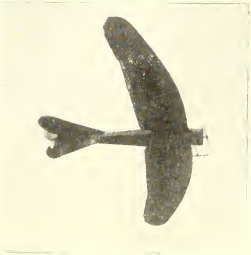
Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, JANUARY 30, 1913. No. 5.

COMING HOME TO ROOST.



Mr. Barnwell, on the successful Vickers V, descending at Brooklands on Sunday evening after one of his habitual cross-country flights.



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Unlucky Thirteen.

Our unfortunate Secretary of State for War, Colonel John Seely, D.S.O., is indeed to be pitied. After fencing diligently with the pertinent questions put to him in the House week after week by Mr. Joynson-Hicks, the officials who supply his answers have, to put it colloquially, "let him down badly." As may be seen by referring to the "Questions in the House," published hereafter, he has been forced to admit that out of the twenty-six aeroplanes stated by him a week before to be in flying order, thirteen are monoplanes which may have to be altered before they can be flown. This interesting point was foreshadowed in these columns last week, but now we have the official admission that it is a fact. Thus we find the Military Wing of the Royal Flying Corps, the "corps d'élite of the British Army," the pet project of poor Colonel Seely, with its three aeroplane squadrons disposing between them of thirteen biplanes which they are allowed to use and thirteen monoplanes which they are not.

There you have it in plain undisputable official figures. The total effective strength of the fighting squadrons, after more than twelve months of strenuous endeavour is thirteen aeroplanes.

That, however, is not the total extent of Colonel Seely's troubles. He has been misled by the compositors of his answers into grievous mis-statements of fact. Those thirteen monoplanes are not actually in flying order. It is doubtful whether any of them are ready to turn out and fly at an hour's notice, and several of them have been standing neglected for so long that it would be criminal to allow anyone to fly them till they have had a thorough overhaul. We know how much work had to be done to the enclosed Avro before it could be made to fly properly after standing for six weeks or so in a Government shed on Salisbury Plain, where, be it understood, it was left at the special request of the War Office who intimated the possibility of its being bought. How much more work must be needed on some of the machines which have been standing idle ever since then. With all due respect to Colonel Seely, I say definitely that the majority of the monoplanes belonging to the Military Wing are not in flying order, even if no alterations are needed to any of them. If alterations are needed to make them safe to fly, it is merely juggling with the truth to say that they are in flying order.

In yet another particular Colonel Seely's reply departs from fact. He says that officers of the Royal Flying Corps have had experience of flying these machines—namely, the thirteen monoplanes alleged to be in flying order, and that only three of the thirteen have been delivered during the last three months. Here is the plain truth. There are in possession of the Royal Flying Corps six Deperdussin monoplanes, four Flanders monoplanes, and one Blériot monoplane, all of which have duly passed their tests and have been accepted. Only two of these machines at most have ever been flown by an officer of the Royal Flying Corps. I make this allowance because possibly Captain Fox may have flown one of the Deperdussins, and perhaps Mr. Gordon Bell may have flown one, but I doubt whether any of them have been flown except by the pilots of their respective makers. Even so it is scarcely even commercial accuracy to say that officers have had experience of flying these machines.

It is just possible that, foreseeing the possibilities of this point being raised, those responsible for Colonel Seely's reply may have made the mental reservation that their thirteen monoplanes include the Nieuports flown by the late Captain Loraine and by Captain Conner, the Deperdussins flown by the late Captain Hamilton, and a little by Mr. Burchardt-Ashton, and the Bristols flown by Captain Allen and by the late Messrs. Hotchkiss, Bettington, and Wyness-Stuart. They may even have included the Anzani-Blériot flown by Captain Fulton. Apart, however, from the fact that none of these officers who are now living have flown the more recently delivered monoplanes, these older machines have been standing idle for months and cannot be said to be in flying order, even by a Government official for Parliamentary purposes. Therefore it seems fairly evident that to reply in the affirmative to a question as to whether any officers of the Royal Flying Corps have had experience of flying the thirteen monoplanes alleged to be in flying order is either a quibble of the kind unfairly known as Jesuitical, or else a plain mis-statement of fact due to a lamentable ignorance of the facts possibly excusable in a Minister who is either badly served by the underlings of his department, or who is being supplied with such answers by those who desire to damage his political credit. In either case Colonel Seely is greatly to be pitied, for I know that at heart he sincerely wishes to establish a really efficient flying corps.

Also, let it be now placed on record that all those who realise the importance of an adequate aerial defence force for this country are keenly recognisant of the good work Mr. Joynson-Hicks is doing by keeping up week after week the series of questions carefully framed to the single end of proving out of the mouth of a responsible Minister that the Military Wing of the Royal Flying Corps for purposes of war does not exist.

The blasting admission by Colonel Seely that the total fighting strength of the Military Wing is only thirteen machines might in itself satisfy Mr. Joynson-Hicks for his work of the past month, but there are other equally grave charges of maladministration to be cleared up, and it is to be hoped that the series of questions will be continued.

Transport.

Another misleading statement for which Colonel Seely is responsible officially is that the Military Wing has motor vehicles for transport of the squadrons by road. This is true, in that there are cars available to carry a few men and possibly some spare parts, but there is not a single properly designed motor waggon for the transport of aeroplanes, and there are scarcely any trained drivers even if the waggons existed.

Community of Aeroplanes.

In an ideal state community of goods might be an excellent thing, but in an aerial defence force community of aeroplanes cannot be advisable for many reasons already stated in this paper; nevertheless, scarcity of machines in the Flying Corps makes it necessary for several officers to fly each machine or for many of them not to fly at all. This scarcity of machines is due either to pure obstinacy on the part of certain officials at the War Office, or to weakness on Colonel Seely's part in dealing with the Treasury. In any case, it is a cowardly excuse to put the blame for the dangerous practice of allowing many different pilots to handle one machine on the shoulders of the officer commanding the Military Wing and on his squadron commanders. I have far too much respect for the good sense of these officers to believe for a moment that they would willingly permit one of their best pilots to attempt a big cross-country flight on a machine on which a learner on probation had done his best to bump the engine through the chassis on to Laffan's Plain.

The reply in the negative to the question as to whether "a new high-powered and high-priced aeroplane was recently broken up by such a learner on the day of its delivery to the Military Wing," is purely a politician's quibble. A new 100 h.p. Bréguet biplane costing about £1,200 was broken up by an inexperienced flier within a day or so of its delivery. This may not be considered to have occurred "recently," but it was less than three months ago. It may not have been smashed on "the day of its delivery," but the day after. An officer holding the Aero Club certificate may not be officially considered a "learner," but a learner he is for all practical purposes. 100 h.p. may not be considered "high-powered," and £1,200 may not be considered "high." Any one of these points is, in the political game, sufficient grounds for giving a negative answer to the question, and on the strength of that answer it will be seen that the "fourth"—and most important—"part of the question does not arise.

That is how party politicians and well paid permanent officials play with the safety of the country and with the lives of the men who are fools enough to serve under a voluntary system, while the so-called manhood of the nation spends its time backing horses, smoking cigarettes, watching Scotchmen hack one another's shins, and flocking to cinematograph theatres.

What a heap of good a bout of war, plague, pestilence and famine would do this country. It would make us or break us, and either would be better than the lethargic indifference which hangs like a pall over the benighted country.—C. G. G.

The Royal Aero Club.

At the committee meeting on the 21st inst. the following aviators' certificates were granted:—393, Sidney T. Freeman (engine-room artificer, R.N.) (Short biplane, Royal Naval Aviation School, Eastchurch); 394, Bernard John William Brady (leading seaman, R.N.) (Short biplane, Central Flying School, Upavon); 395, Arthur John Bateman (leading seaman, R.N.) (Avro biplane, Central Flying School, Upavon); 397, Lieut. Frederick William Bowhill, R.N.R. (Bristol biplane, Bristol School, Salisbury Plain); 398, Lieut. A. C. G. Brown, R.N. (Bristol biplane, Eastbourne Aviation School, Eastbourne); 399, Lieut. Alexander Shekleton (Royal Munster Fusiliers) (Bristol biplane, Bristol School, Brooklands); 400, Capt. Gilbert Braithwaite Rickards (late Royal Munster Fusiliers) (Bristol biplane, Bristol School, Brooklands); 401, Henry Elliot William Macandrew (Farman biplane, Ducrocq School, Brooklands); 402, Assistant-Paymaster John Henry Lidderdale, R.N (Maurice Farman biplane, Central Flying School, Upavon); 403, Sub.-Lieut. Reginald Lennox George Marix, R.N.V.R. (Bristol biplane, Bristol School, Salisbury Plain); 404, Lieut. H. D. Vernon, R.N. (Bristol biplane, Bristol School, Salisbury Plain); 406, A. L. Russell (Caudron biplane, Ewen School, Hendon); 407, E. R. Whitehouse (Deperdussin monoplane, Deperdussin School, Hendon); 408, Lieut. J. T. Babington, R.N. (Short biplane, Royal Naval Aviation School, Eastchurch).

Letter from the Aero Club de France asking the club to give its sanction to the issuing of "brevets" certificates to M. W. M. Macneill, Lieut. J. E. G. Burroughs, Mr. H. C. Fuller, Lieut. E. G. Harvey and Mr. E. Masterman [presumably Commander Masterman, R.N.—Ed.] was read and the necessary permission granted.

The airship pilot certificate was granted to 15, Capt. the Hon. Claud Brabazon.

Paris Conference.

The questions of hydro-aeroplane certificates and the Gordon-Bennett Aviation Cup for 1913 have been discussed by the committee of the R.Ae.C., and Mr. Roger W. Wallace, K.C., and Mr. Griffith Brewer were delegated to represent the club at the conference of the Fédération Aéronautique Internationale to be held in Paris on Tuesday, the 28th inst.

Royal Aero Club Annual Dinner.

It has been decided to hold the annual dinner of the club on Thursday, March 6th, 1913. Full particulars will be issued to the members in the course of the next few days.

An Unfounded Rumour.

It is a pleasure to be able to state that contrary to first impressions the Mr. Boland who is reported as having been killed at Port of Spain, Trinidad, last week, is not Mr. Frank Ballard, who learnt to fly at the Spencer School last year. Mr. Spencer states that Mr. Ballard arrived in London about a fortnight ago, and is at present here. The name of Boland does not occur in the list of members of the Royal Aero Club, so presumably the American report is in error in stating that he was a member.

The First Order for Single Seaters.

It is interesting to note that the five Avro biplanes recently ordered by the War Office are all single seaters, and that these are the first single-seated machines ordered for the Army.

Another interesting piece of news concerning the Avro firm is that a new pupil who has recently joined the firm has ordered a 100-h.p. hydro-aeroplane for his own use.

For Mrs. Hardwick.

The following additional subscriptions have been received for Mrs. Hardwick:—Boxall and Co., £2 2s.; Fred May, £1 1s.; Mark Webber, Ltd., 10s. 6d.; C. J. Parsons, 10s.; Rogers Bros., £1 1s. Total for week, £5 4s. 6d.

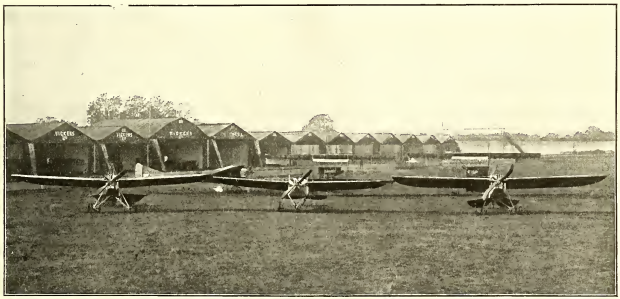
It is announced that the marriage arranged between Miss Doris Hart-Davies and Mr. Walter Lawrence will not take place.



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How to Join the Royal Flying Corps.—(*Continued.*)

BY W. E. de B. WHITTAKER.

A condition that is apparently ignored by the Secretary of State for War and forgotten by the country is that the employment of civilian aviators in the Royal Flying Corps is merely a temporary measure. Neither of the Services have any great anxiety to add civilians to their ranks. The difficulties of the position are too great. Rank, discipline, and difference in tone are all sources of trouble that must not be forgotten. And so even though there is a serious shortage of officers in the Army and Navy the present need of civilian aviators will disappear. Therefore any regulations regarding the Royal Flying Corps in its relation to the civilian must be examined in this light.

Paragraph 15 reads as follows: "Officers who have elected and been recommended for continuous service are posted to the Military Wing as flying officers when vacancies occur." A glance at the current "Army List" will show that vacancies are the rule and not the exception in the Royal Flying Corps.

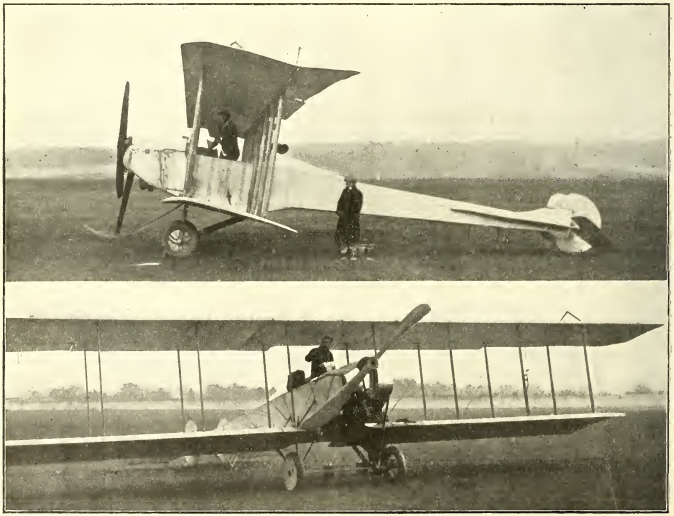
That the Corps has only thirteen aeroplanes instead of eighty-four is no reason why a number of civilians who have passed the necessary tests should be kept waiting without information as to their future.

Towards the end of December the first course at the Central Flying School came to an end, and a number of candidates passed out. The first month of the new year has drifted by and yet none of these officers knows what his future is to be. Those who have applied for continuous service have not been informed whether they are to be accepted, and consequently they are unable to make any arrangements. They have to refuse positions in civil life because they may have to do four years' service. In the case of the War Office placing them in the Reserve instead of accepting them for continuous service they are seriously out of pocket and may find it difficult to find work.

Officers not selected for continuous service (paragraph 16) "are posted to the Reserve of the Royal Flying Corps, and will be required to be attached to the Naval or Military Wing for a period not exceeding one month subsequent to the date of graduation at the Central Flying School."

The impressions one gained from the official statements of last year were that certain civilian aviators would be granted commissions on the active list of the Regular Army for the period of four years or longer for which they engaged to serve. It appears, however, that this view was wrong, as in every case civilians will be posted to the Reserve of the Royal Flying Corps, and will do continuous service with the Military Wing as officers of the Reserve.

A candidate carrying out the one month's service will be paid at the rate of a flying officer, namely, twelve shillings a day plus eight shillings a day flying pay.



The revised Coventry Ordnance Biplane. The extended span and balanced ailerons may be noticed. The machine now gets off at about 20 miles an hour and flies at about 55. Her landing speed is something like 15 m.p.h.

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A point which is not brought out in the "Short Guide" is that candidates selected for continuous service, if they have had no previous military training, are to be attached to a line regiment for a short course. During this period, the length of which is at present indefinite, some knowledge of the rudiments of the military science will be acquired, and some acquaintance made with the principles of discipline. It was a matter of surprise last year that no official statement was made to this effect. That it is a necessary course none can doubt.

Paragraph 17 reads: "Those in the 1st Reserve are required to undergo a flying test each quarter." The quarterly test consists of a series of flights amounting in total duration to nine hours.

Paragraph 21 states that "For the quarterly flying test an officer of the 1st Reserve may use either his own aeroplane or an aeroplane supplied at Government expense. An officer using his own aeroplane will receive an allowance." These tests can take place wherever there are suitable means of observing the duration of the flights. An aviator who flies daily in the course of business merely counts nine hours of his flying as the official test period.

In Paragraph 19 it is laid down that "Officers who fail to undergo the quarterly flying test without adequate reasons are called upon to resign their commissions." Certainly, if any officer flies less than nine hours in three months he can hardly claim to be an efficient aviator, and the sooner he is removed from the Service the better. A similar paragraph is 20, which states that "An officer may be required to resign his commission at any time if he is reported to be unfit to perform the duties of a flying officer."

The only conclusive reference to the 2nd Reserve is made in paragraph 18, which says that "Officers who through illness, absence abroad, or other adequate reason are unable to undergo the quarterly flying test, are placed in the 2nd Reserve." This is the first indication as to the possible uses of a Reserve which is without pay or duties.

There is practically nothing else in the "Short Guide" conveying any information of value to the intending candidate. The authorities themselves have come to no definite decision on many points of importance. The Royal Flying Corps and its organisation is still in a state of chaos not very creditable to the founder of the scheme.

Nothing can be done without money, but money itself is valueless if no plans for its use are in being. The day for tentative steps has passed; prompt and decisive action is the only solution of the difficulty. It is of the first importance in a new arm of this sort in which personal risk is disproportionately high, that every consideration should be extended to those who are willing to become flying officers. Yet even the most obtuse friend of the Government cannot say that consideration has been extended to candidates.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the London Gazette of January 24th, War Office:—

Regular Forces, Royal Flying Corps.—Military Wing: Capt. Charles Darbyshire, 4th Batt. Lancashire Fusiliers, to be a flying officer, and to be seconded; November 7th, 1912. Sec. Lieut. Collyns P. Pizey, Special Reserve, is appointed to the Reserve; January 25th, 1913.

Special Reserve of Officers, Royal Flying Corps.—Military Wing: To be Sec. Lieutenants (on probation), January 25th, 1913, Francis W. H. Lerwill, Henry R. Busteed, and Edward N. Fuller.

FRANCE.

General Hirschauer, Permanent Inspector of Military Aeronautics, has, under date January 17th, 1913, issued new regulations for the obtaining of the military brevet. The rules are divided into two parts, as follows: (1) Practical.—i. A triangular journey of not less than 200 kilometres made in the same machine in forty-eight hours. Two compulsory landing places en route are specified before starting. The shortest side of the triangle must be at least twenty miles in length. ii. A journey of 150 kilometres in a straight line over a specified course. iii. A journey made in the same day on the same aeroplane of at least 150 kilometres in a straight line. In the course of these tests the pilot must make one continuous flight of 45 minutes duration at a minimum height of 800 metres. If atmospheric conditions exclude this high flight while in the course of one of the three tests a special test may be made on an aerodrome. (2) Theory.—Candidates must pass an examination in the following subjects: i. Map reading, meteorology, barometric pressure, temperature, storm, winds, resistance of the air, etc.; ii. Laws of air resistance applied to aviation, construction of aeroplanes; iii. Internal combustion engines, principles, etc.

Lieutenant Aviators Mercier, Rey, Fuzier, des Hautschamps, Mendès, Voisin and Villa are attached to the Aviation centre at Lyon.

Sappers Trat and Senart flew a Henry Farman biplane (80-h.p. Gnome) from Juvisy to Villacoublay in a thick fog on January 23.

Gastinger, the Clement-Bayard pilot, finished, on January 23rd, the last of the tests for the military brevet. He flew a Clement Bayard monoplane (A.R.3) from Pont-Levoy, which place he left at 10.15 a.m. to Issy-les-Moulineaux, where he arrived at 12.5 p.m. The wind during this flight was in excess of forty miles an hour.

The department of Eure et Loire has offered a military type biplane to the Ministry of War. The offer was accepted.

On November 15th two escadrilles of M. Deperdussin monoplanes left France for Oudjda in Morocco. On January 15th they were all assembled and in flying condition. Since that date innumerable flights have taken place in every direction. Lieutenants Jeannerod (commanding), Bruncher and Magnien are the principal pilots.

On January 23rd three Henry Farman biplanes and two Maurice Farman biplanes were put through the required tests at Buc, and were accepted by the Army. The three Henry Farman biplanes are those presented by the town of Le Havre.

Two days later at Reims the Deperdussin monoplane, presented to the army by the Comité de l'Avion du XVe Arrondissement was put through the required official tests.—W.

GERMANY.

The Zeppelin dirigible balloon, L.Z.13, began its trials on January 19th. So soon as it is accepted the L.Z.15 will replace the Z.1 at Metz.

The Ministry of Marine has purchased a new type hydro-aeroplane (80-h.p. engine). The float is single and canoe shaped. The centre of gravity is very low. The speed is 65 miles an hour and its stability is great.

Some sections of the Baltic Sea being now under ice, the hydro-aeroplanes stationed at Putzig have been removed to Wilhelmshavn for service. When the weather becomes warmer they will be returned to Putzig.

The new Parseval dirigible, P.L.11, made a trial flight of one hour on January 21st. It will be taken over shortly by the army.—W.

The retirement is announced of General von Lyncker, hitherto Inspector-General of the German transport troops, a sonewhat startling fact in face of the new Airship and Aviation Bill that is about to be placed before the Diet. General von Lyncker is the man who has brought motor transport in the army up to its present pitch and devoted a great amount of interest to military aeronautics and aviation, although his detractors aver that this arm was but secondary in his estimation.

He has, however, created a well-founded base on which his successor can raise up a very powerful building, and it remains to be seen in how much Herr von Lyncker's plans will be fulfilled.

The coming spring will witness the commencement of preparations for an airship station on Heligoland, which will be built into the hollow of Sapskuhle and be hidden from outside view. The Sapskuhle is a depression in the island of about 120 metres in length and 50 wide, and the present plans for the hangar include a hydraulic plant capable of raising the shed to the level of the rest of the island should it be necessary. Besides this, the hangar is to be a revolving one, as are to be all the new constructions of this kind put up by the German

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Government, and large enough to hold two naval airships. On the other hand, it is not deemed likely at present that an aviation station will find a home on the island, as the space necessary for such is not available.

It is stated that the cost for fourteen military airship hangars has been included in the forthcoming German Budget.—B.

AUSTRIA.

The Ministry of War has decided to buy thirty more aeroplanes, to be delivered at the end of February. Twenty of these are Lohner biplanes and ten Etrich monoplanes. A large number of hydro-aeroplanes are also to be purchased.—W.

Austria is pushing ahead rapidly with the extension of its aviation stud, as seventy new machines, chiefly of the Lohner-Daimler biplane type, are due for delivery by the end of February. Further acquirements are to be made in foreign countries as well.—B.

ITALY.

H.M. the King has, in recognition of their gallant services as military aviators in Tripoli, decorated Captain-Aviator Moizo with the Military Order of Savoy and Captan Bolla with a silver medal.—W.

RUSSIA.

The Clement Bayard dirigible building for the Ministry of War will be known as "C.B. V.bis." It will be of 9,660 cubic metres with a speed of fifty miles an hour. Delivery is expected about the end of February. A second of the same type is likely to be ordered.—W.

A Russian military commission has paid the aviation stations and works around Berlin a lengthy visit. Fraulein Galantschikoff, who recently set up a new altitude record for women, acted as interpreter.

Russia has ordered thirty-seven German Wright machines in Berlin, as the War Office was so intensely satisfied with the results achieved by Abramowitsch, of the Wright Company, in St. Petersburg and Moscow.—B.

NORWAY.

A large increase is to be expected in the air corps of this country. The army has at present two Maurice Farman biplanes, and the navy a German monoplane (100-h.p. motor).—W.

DENMARK.

The Danish navy has at present four aeroplanes, two of them hydro-aeroplanes. Five aviators hold commissions on the active list—Lieutenants Prince Axel, Christiansen, Hock, Militdz, and Ulrich-Birch.—W.

UNITED STATES.

Captain Washington I. Chambers, who is in charge of American naval aviation, is about to test two devices for attaining automatic stability. The first is a development of the gyroscopic mechanism, which Mr. Glenn H. Curtiss has been using successfully on his flying boat. The other is a simplified modification of the Doutre longitudinal stabiliser combined with a modification of the Etévé speed indicator, both of which are at present being used in France.

It may be remembered that The Aeroplane published, some time ago, a description and illustration of a catapult device for launching aeroplanes from a ship's deck. The United States Navy has been experimenting, not unsuccessfully, with a similar apparatus. There is a light movable track, along which travels a light wooden trolley bearing the aeroplane, which is clamped to it and released automatically at the end of the run. The motive force is compressed air; a cylinder with a 40-in. stroke actuates a multiplying arrangement of wire rope and pulleys. The trolley and aeroplane are projected from the track together, the former dropping into the water, to be hauled aboard, the aeroplane rising with grace into the air—usually. The device is primarily intended for hydro-aeroplanes, but it could be used with advantage to launch military machines in bad country.

The U.S. Army aviators are experimenting with soot as a means of signalling from aeroplanes, the soot being blown in small or large clouds from a cylinder.

News comes across the Atlantic that the U.S. Government is about to spend £80,000 on the acquisition of a new flying ground, known as College Park, in the State of Maryland. It is unlikely that the British Government will attempt to emulate this latest American folly; with a force of thirteen "practicable" aeroplanes what would be the use?—A.B.

FOREIGN NOTES.

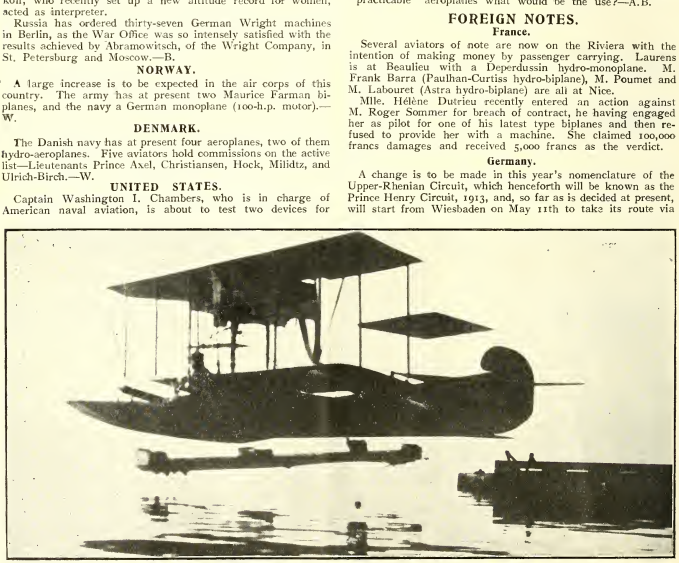
France.

Several aviators of note are now on the Riviera with the intention of making money by passenger carrying. Laurens is at Beaulieu with a Deperdussin hydro-monoplane. M. Frank Barra (Paulhan-Curtiss hydro-biplane), M. Poumet and M. Labouret (Astra hydro-biplane) are all at Nice.

Mlle. Hélène Dutrieu recently entered an action against M. Roger Sommer for breach of contract, he having engaged her as pilot for one of his latest type biplanes and then refused to provide her with a machine. She claimed 100,000 francs damages and received 5,000 francs as the verdict.

Germany.

A change is to be made in this year's nomenclature of the Upper-Rhenian Circuit, which henceforth will be known as the Prince Henry Circuit, 1913, and, so far as is decided at present, will start from Wiesbaden on May 11th to take its route via

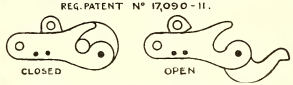


The new launching apparatus for hydro-aeroplanes now being experimented in the U.S.A. The cradle is seen falling as the Curtiss flying-boat used for the tests gets under way. (By courtesy of "Aero and Hydro," St. Louis.)

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Baden-Baden and Strasburg to Constance, with various intermediary daily stages. Nine competitors only may take part in the circuit itself, the entries for the meetings in the different towns again being separate from the circuit.

It is stated that several South American States are negotiating with German firms for military aeroplanes, the Rumpler type being chiefly favoured by the Argentine and Uruguay.

Lieutenant Paul Graetz, formerly on the active list of the German army, who is contemplating a circuit of New Guinea in an airship of German construction but bearing a British name and manned by members of both countries, has won a certain amount of renown by his explorations of Africa by car and boat. Whether his latest ambitious project will be fulfilled has yet to be seen. Graetz hopes to carry out a Berlin-London trip in the spring to test his vessel, which will, should these plans be realised, be anchored on a steamer off the coast of New Guinea.

Both the Zeppelin Wharf and the Maybach Motor Works are increasing their staff and localities as a result of the large number of orders they are engaged on at present, with more pending. The Zeppelin Company now employs 225 workmen.

We learn that the Luftfahr Betriebs Gesellschaft at Berlin-Johannisthal is in money difficulties, and has called a meeting of creditors, when a scheme will probably be agreed to and the company carried on on a different basis. The Parseval Works at Bitterfeld are willing to take back the two airships they delivered to the company and commence a passenger service of their own. The L. B. G. put their present difficulties down to the enormous cost and expense of airships compared to the very slight interest of the public at large for passenger tours. Although the scale of charges for an aerial trip was reduced to seventy-five marks, there was no increase to be noticed in business.—B.

Switzerland.

On January 1st a manifesto, signed by the most influential men in the Republic, was scattered broadcast throughout Switzerland to induce the population to subscribe towards the creation of a national fund for the upkeep of military aviation. It would seem that hitherto the Diet of the Confederation could not approach the question owing to the heavy demands on the Exchequeur, and it is therefore only possible to support a military aviation department by voluntary gifts. A committee has been formed in each canton, which will be responsible for all monies received.—B.

Austria.

Austria, apparently, is following Italy's example in demanding working agencies of aviation firms entrusted with Government orders to be opened on its territory. The War Office greatly approves of the Mars monoplane Lieutenant Bier piloted near Vienna, and is negotiating with Leipzig headquarters for a large purchase, conditional on the Mars firm building the machines in Austria from Austrian material.—B.

Italy.

On January 23rd two world's records with passengers were broken on an 80-h.p. Caproni monoplane at Vizzola Ticino, the 200-kilometre record being cut down to 1.56.30, and the 250-kilometre to 2.24.30.

China.

The Russian aviator Kousminsky, who recently made excellent flights on a Blériot monoplane over Pekin, has continued his successful series of flights in the vicinity of Hong Kong, Macao, and Tientsin. The Celestial race have in every case afforded him every assistance possible and have displayed a high degree of interest. M. Kousminsky was once in the Diplomatic Service, but became an aviator last year, taking his brevet at the Blériot School at Etampes.—W.

The Crossing of the Alps.

There are feats the performance of which stand out with exceptional clearness before the peoples of the civilised world —a clearness frequently out of all proportion to the value of the deed. Three years ago a pilot might have made a perilous flight of forty miles across country almost without notice, yet the passage of a silvery strip of water twenty miles across earned him world-wide fame. It is the overcoming of some natural obstacle of historic interest that appeals to public sentiment. Hannibal crossed the Alps when the modern world was young. Centuries later Napoleon made the same weary journey. Both these happenings have a high historic



M. Jean Bielovucic.

value. Something of the glamour attached to their journeys clings to those exponents of the newest science who have crossed the Alps by air.

Two years ago Chavez flew from Brigue to Domodossola, had a serious accident in landing, and died some days later of shock. On Saturday last Jean Bielovucic, one of the earliest pilots, repeated the flight of Chavez, this time with perfect success. Leaving Brigue at noon on a Hanriot monoplane (100-h.p. Gnome engine), he passed over the Simplon village at 12.16 p.m. and landed within two hundred yards of Chavez's memorial at Domodossola at 12.28 p.m. His mean height throughout the journey was 7,500 ft. above his starting point at Brigue, which is itself over 6,000 ft. above the sea. After landing he was greeted with great enthusiasm by the Italian Under Secretary of State for the Interior, Sig. Falcioni.

M. Bielovucic was born in Peru on July 30th, 1889. His first flights were made towards the end of 1909. He first earned fame by flying a Voisin from Paris to Bordeaux in a day, and last year his performance on a Hanriot in the Military Aeroplane Competition added materially to his high reputation.

The Death of Charles Nieuport.

Aviation is a science in which pairs of brothers have played a large part. The Wrights, the Voisins, and the Farmans are enough to illustrate the point clearly. The Nieuports, Edouard and Charles, are a further case in point, with a note of singularity in that both were killed while in their practice of their self-chosen science. Edouard Nieuport, it will be remembered, was fatally injured while flying on duty in the course of 1911. Charles has now followed him.

On January 24th, M. Charles Nieuport was at Etampes putting four three-seated 100-h.p. Gnome engined Nieuport monoplanes through the requisite delivery tests for the French army. Captain Destouches was present representing the Ministry of War. Starting a little after 2 o'clock, M. Nieuport took one machine to a height of 500 metres in fifteen minutes with a useful load of 500 kilos. Shortly before 3 o'clock he restarted with Guillot, a mechanic, as passenger, and flew in the direction of Orleans. When making a heavily banked turn at a height of 1,000 metres the machine sideslipped and crashed to the ground killing both pilot and passenger at once. The accident occurred between Monneville and Méréville, about eight kilometres from the aerodrome.

Charles de Nieport (for the form "Nieuport" was adopted by his brother for business purposes) was the son of Colonel de Nieport, an officer of good birth and high personal distinction. Born at Lagny, Seine-et-Marne, on August 4th, 1878, Charles was always distinguished for sporting instincts, taking some part in the popularisation of the motor car. After his brother's fatal accident in September, 1911, he determined to carry on his brother's work as constructor and pilot. With this object in view he learned to fly at Pau, taking his certificate on January 22nd, 1912 (No. 742).

Since then he has devoted himself to the furtherance of the business with singular courage and an honest aim. One knows little of his capabilities as a man of business, but as a pilot he was of high excellence. His personal charm was great, the modesty of his nature protecting him from much

of the enmity engendered by success. There are many who will cherish his memory, and his public name will live with even those who knew him not in a personal sense.—W. E. DE B. W.

Pau to Madrid by Aeroplane.

Exceptional feats rarely come singly. The same week that Bielovucic successfully flew the Alps the Pyrenees were crossed by a young and almost unknown pilot. On January 24th a Swiss aviator named Oscar Bider, who learned to fly on a Blériot monoplane at Pau and passed the test for his pilot's certificate on December 8, 1912, flew from Pau to Madrid, a distance of 500 kilometres, with but one stop en route. Leaving Pau at 7.10 a.m. he landed at Guadalajama, a village thirty miles from Madrid, at 12.30 p.m. Starting again at one o'clock, he landed finally outside Madrid at about 1.30 p.m. The feat is excellent, especially when one considers the lack of experience on the part of the pilot.

A World's Passenger Height Record.

Miss Trehawke Davies, flying with M. Legagneux, in a Morane-Saulnier monoplane, at Villacoublay, on Monday last, reached a height of 12,040 feet. This constitutes a world's record. The flight lasted fifty minutes.

Princes in the Air.

Royalty of all sorts seems to be taking quite an interest in aviation these days, the latest royal prince to go up in an aeroplane being Prince Leopold of Battenberg, brother of the Queen of Spain, who accompanied Mr. Howard Pixton on a Bristol in Spain last week.

It is reported that Prince Cantacuzène, who has been flying a Bristol quite well over Salisbury Plain for a considerable time, damaged his machine somewhat severely in landing recently, but fortunately escaped quite unhurt himself. It is just as well to note this fact, as exaggerated reports of comparatively trifling accidents are liable to get into verbal circulation, and do undeserved harm to the reputations of the pilots, and of the machines on which the accidents occur.

An Appointment of Interest.

Mr. R. O. Cary, one of the most deservedly popular members of the Royal Aero Club, has just been appointed general manager of the Sopwith Aviation Company. Mr. Cary will be remembered in connection with L. D. Gibbs and Co., Ltd., which ultimately became the Univeral Aviation Co. ,Ltd., when he had charge of the firm's machines which competed so successfully at the Wolverhampton, Bournemouth, and Lanark meetings in 1910. Lately Mr. Cary has arranged and managed a number of highly profitable exhibition flights for Mr. Gustav Hamel in various parts of the country. All will wish the alliance of Messrs. Sopwith and Cary every success, and the combination should be a very strong one.

The Second Cody for the Army.

On the 22nd inst. the second 120-h.p. Cody biplane for the Royal Flying Corps passed its hour's test flight by flying for an hour and a half. It also passed its rolling test with ease. It is well to note that in the new type Codys the rudders are placed in the slip-stream of the propeller, so that the machines manœuvre very handily on the ground; in fact, they will turn under their own power in a circle of less radius than the span of the machine. In the latest machine there is a decided dihedral angle, so that there is a noticeable amount of natural lateral stability, and though, perhaps, the lifting power is slightly decreased, there is still an ample amount for any load which is likely to be put up. The elevators are now placed nine inches higher than in the Military Competition winner, which Mr. Cody states, gives much better longitudinal balance, so that the machine will fly herself in anything like a steady wind. He says, indeed, that given a calm day he will control the machine longitudinally and laterally by means of a piece of thread tied to the top of the control lever, and when Mr. Cody makes a statement one can rely on its accuracy.

Mr. Hucks at Lincoln.

During the latter part of last week Mr. Hucks gave a very interesting series of exhibition flights to enthusiastic crowds of spectators at Lincoln. Magneto trouble delayed the start for an hour on Wednesday, but patience was well rewarded when the machine finally got away, and Lincolnshire papers are loud in their praise of the masterly way in which Mr. Hucks controlled the 70-h.p. Blériot, being particularly impressed with his spiral glid. and his way of racing along at seventy-six miles an hour within a few feet of the ground. Friday's flying was accomplished in a strong and gusty wind, which allowed Mr. Hucks to take no spectacular liberties. He gave, however, a very fine exhibition of control, flying to 3,000 ft. or more. After a very clever landing, an unkind gust picked the machine up and dropped it, breaking the chassis-springs, but doing no further damage. This was repaired by flying time on Saturday, when Mr. Hucks gave his final demonstration.

In connection with Mr. Hucks' visit, a very interesting lecture was given under the auspices of the Lincoln Aero Club, at the Municipal Technical School, by Mr. Rowland Ding. The lecture, which was well attended by a keen and intelligent audience, was followed by an interesting discussion.—A. B.

Clipping Cupid's Wings.

Apparently the official American view is that aviators, unlike poets, are made, not born; at any rate, aeroplane pilots of the United States Service are not permitted to wed.



The Vickers Team.—Left to right, M. Palassy, chief mechanic Mr. H. Barnwell, chief pilot and school manager, and Mr. Knight, pilot. Messrs Barnwell and Knight have proved themselves excellent instructors as well as pilots.

Questions in the House.

Oral Answers.—January 22nd, 1913.

Royal Flying Corps.

Mr. Joynson-Hicks asked the Secretary for War whether the Royal Flying Corps possesses at the moment any proper transport for aeroplane squadrons travelling by road; whether the Royal Flying Corps possesses a motor-driven travelling workshop; and whether proper trailers which can be attached to motor-cars exist for the purpose of carrying aeroplanes by road.

Colonel Seely: The Military Wing has motor vehicles for transport of the squadrons by road; the full equipment is not yet complete. The supply of a motor-driven travelling workshop is now in hand, and trailers of the nature mentioned are now being manufactured.

Mr. Joynson-Hicks asked whether the twenty-six aeroplanes belonging to the Military Wing of the Royal Flying Corps, which are said to be in flying order, include a number of monoplanes recently delivered; if so, whether alterations are to be made in these monoplanes; if so, whether they can be classed as being in flying order; and whether any officers of the Royal Flying Corps have had experience of flying these machines.

Colonel Seely: The twenty-six aeroplanes mentioned include thirteen monoplanes, of which only three have been delivered during the last three months. The monoplanes are being examined and any improvement found to be necessary will be made; they are in flying order, though possibly some improvement may be desirable. The reply to the last part of the question is in the affirmative.

Mr. Joynson-Hicks: Will these monoplanes come under the consideration of the Committee appointed to consider the general question?

Colonel Seely: Yes, sir. All monoplanes must now be examined with a view to a full report from the Committee.

Mr. Joynson-Hicks asked whether, in view of the fact that it is the general custom in the Royal Flying Corps for an officer to fly the same machine, the Secretary for War will consider the advisability, in the interests of the safety of such an officer, that others should be prevented from flying his machine; and whether the absence of any hard and fast rule on this subject is due to the fact that there are insufficient machines to provide a separate machine for each officer who flies.

Colonel Seely: It is usual for officers in the Royal Flying Corps to fly the same machine, but by no means invariable. Quite apart from the question of the number of machines, it is not considered advisable to limit the discretion of officers commanding squadrons in allotting machines.

Mr. Joynson-Hicks asked the Secretary for War whether it is advisable that officers who are on probation with the Royal Flying Corps should do their course of training on machines belonging to the Military Wing, in view of the fact that such officers are liable to damage these machines, which ought, in fact, to be in a fit condition to be used on active service at short notice; whether he will consider the advisability of buying a number of smaller, low-powered, cheaper machines on which such officers should practice without risk of damage to the materiel of the fighting squadrons; whether a new high-powered and high-priced aeroplane was recently broken up by such a learner on the day of its delivery to the Military Wing; and whether, in the public interest, he will prevent money being expended in this way when we admittedly have an insufficient supply of aeroplanes both for tuition and for active service purposes.

Colonel Seely: As regards the first part of the question, it is not proposed to interfere with the discretion of the officer commanding the Military Wing in this respect. As regards the second part of the question, the necessity of having aeroplanes for practice has been borne in mind in placing orders. The reply to the third part of the question is in the negative, and the fourth part of the question accordingly does not arise.

Royal Flying Corps.

Mr. Joynson-Hicks asked the First Lord of the Admiralty whether certain Special Reserve officers of the Royal Flying Corps have graduated at the Central Flying School and been recommended for continuous service to the Naval Wing; whether, notwithstanding that, they are kept waiting without any remuneration, liable at any moment to be posted for service, and for that reason unable to take up any other work; and, if so, whether he will give instructions to remedy this state of affairs.

The First Lord of the Admiralty (Mr. Churchill): Only one gentleman who is a candidate for continuous service in the Naval Wing of the Royal Flying Corps has graduated at the Central Flying School, and he has been recommended for the Naval Wing. The gentleman in question, however, suffers from a physical disability which may prevent his being accepted, and the matter is now under consideration.

The War Office and the Aeroplane Industry.

It is within the memory of all interested in aviation that in one of his historic pronouncements in the early days of the Royal Flying Corps, the present Secretary of State for War expressed the official intention of "fostering a healthy industry." We all know how this has been done so far: how orders have been given for machines in fours and fives without any guarantee of further orders which would enable manufacturers to obtain financial backing; how private enterprise has been crushed by ordering copies of Government-built machines instead of setting a standard test for machines of any design and approved workmanship; how even these orders have been delayed by dilatory and over-officious inspectors and the blame for the delay cast on the makers: and how a dozen other obstacles have been put in the way of industrial development. It may, therefore, be of interest to set forth some of the more recent difficulties which have afflicted constructors.

The ban on monoplanes has naturally upset all the arrangements of those firms who are primarily makers of monoplanes, but no assistance has been given them by asking them to tender for biplanes, and the unnecessary delay in the issue of the report of the Committee appointed to investigate the safety or otherwise of monoplanes has made their position worse still, so that some firms are seriously considering whether it is worth their while to continue in the trade at all, and in one famous instance, the Blériot firm a big factory which should by now have been in full working order, has not even been started.

Another monoplane firm built three machines to the order of the War Office, and delivered one of them. Then the authorities changed their minds about the engines they wished to have. The machine already delivered was sent back, and now the firm has had all three machines on its hands since last October waiting for instructions. That means a matter of £3,000 of capital locked up till some vacillatory official or other comes to a definite decision.

In another instance two monoplanes have been built to the order of the Australian Government. Unfortunately the supervision of the business was left in the hands of the British War Office. After a long delay in placing the order, instructions were given to hurry the work forward, and to submit the machines to inspection by the Royal Aircraft Factory before despatching to Australia. Men were put on overtime, thus increasing the cost of production, and the machines were finished. The Aircraft Factory agreed to inspect the machines at the works if the expenses of their inspector from Farnborough were paid. These expenses were paid, though the request for payment was obviously a most unreasonable one. Last week, after the machines had been waiting nearly three weeks for the R.A.F. inspector to arrive, a curt telephone message was sent that the machines must be brought to Farnborough for inspection. Mark you, no test flight has to be made, it is only a question of passing the work. Yet those machines have to go to Farnborough from London, and then be brought back to London to be shipped from the Thames. Is such a course of action official imbecility or is it done on purpose to annoy the constructors?

Even the biplane firms are no better treated. They are kept hanging on in suspense with half promises of orders. They are asked to tender for machines of their own design: then they are asked to tender for copies of the "B.E." type. Weeks and months pass, and no orders are given, and equally they are not told that no orders are to come, so that they do not know whether to shut up shop and cut their losses, or to live on their faith in the future. Such is the lot of an industry "fostered" according to the Seely method.

Then rumours emanate from official quarters that the policy for the future is to order parts only from certain makers and assemble them at the Royal Aircraft Factory; or that nothing is to be ordered except copies of machines designed by the R.A.F. Staff; or that a certain powerful group at the R.A.F., backed by friends or relations at the

War Office, have worked out a plan to "break" the industry by continual treatment such as that exposed in this paper on many occasions, and by hanging up orders till the manufacturers go into liquidation, the idea being that if the industry is thoroughly "broken" all future machines must be built at the R.A.F., and that the clever men who have plotted successfully to break it will then secure well paid jobs in a huge Government aerial dockyard. These rumours are so well authenticated that one cannot afford to neglect them, and one has to fight them, in Parliament and out, as strenuously as if one were fighting a genuine official programme.

The whole official attitude is unfair to the industry and a danger to the defences of the country. Leaving the former out of the question, the authorities can have no moral defence for keeping their policy secret and sapping away the capital which, under a proper state of affairs, would be profitably employed building weapons of defence, and in developing new types which would assist the progress of aviation to its ultimate end as the harbinger of universal peace.

If the Government does not want aeroplanes built by private enterprise, let the fact be announced, and we shall all know where we are. But, while things are mismanaged as they are, can there be any wonder that very many of those engaged in building aeroplanes firmly believe that there exists a cleverly organised plot to crush the British aeroplane industry and to forward the personal aggrandisement of certain officials —C. G. G.

Airships or Scareships.

A correspondent from Cardiff sends cutting from the "South Wales Echo" reporting that Capt. Lionel Lindsay, Chief of the Glamorgan Police, and Mr. Ernest Morgan, of Cardiff, as well as several other people, saw what they believed to be an airship about 5 p.m. on the evening of Friday, January 17th. Mr. Steve Morgan, of Merthyr Tydfil, also reports that he saw in the air the same evening a big light which left a column of smoke in its train. Capt. Lindsay reports that the machine was much bigger and moved much faster than the Willows airship.

Further, Mr. Herbert A. Pertwee, of Yarmouth, also says that he distinctly heard an aeroplane or airship pass over his house about midnight on January 14th, and he states that early on the previous morning Mr. Walter Back heard one over Southtown. A Corporation employee also alleges that he and his daughter saw a long airship pass out over the sea at 11.55 p.m. on Thursday, January 23rd.

Curiously enough the "Irish Times" of the 11th reports an airship having been seen at Newport, Co. Mayo, and other correspondents report having seen an airship recently over Colnbrook on the Bath road. The last-named correspondent vouches for the fact that it was not one of the Farnborough machines, which are known by sight to those who saw this airship.

THE AEROPLANE does not venture an opinion as to whether any or all these machines were real or imaginary, but in either case it shows that the people of this country are beginning to realise that it will be well to keep an outlook on the sky in time of war, so that whether these vehicles are airships or "scareships" they are, at any rate, serving a useful purpose.

The following letter from a naval officer on the subject is of interest:—"Sir,—In view of recent statements as to the alleged nocturnal visitations of foreign aircraft, it would not be amiss to consider the benefits that are to be gained by any Power adopting such measures. It is a matter of common knowledge that a district with which one is thoroughly familiar, is quite unrecognisable if viewed from above, and without doubt there would be the same difficulty for an air-scout traversing familiar land after dark. The advantages, therefore, to a Power whose policy is offensive, in knowing the 'nocturnal geography' of his adversary's territory are obvious.

"Whether this has any connection with recent occurrences or not, one cannot say, but if it could be shown that there were any such connection, the coast defence arrangements, i.e., searchlights, etc., would soon render such trespass risky. CRUISER SQUADRON."

Aviators at Play.

On Thursday and Friday last "The Three Little Maids" was played by an amateur company at the Holstein Hall, Weybridge, in aid of the Weybridge Cottage Hospital. The show was a great success from beginning to end. Mr. R. O. Cary organised the performance and acted as musical director. The band acquitted itself admirably. The Three Little Maids were played by Mrs. Cary, Miss Nora Higgins and Miss Muriel George, all of whom acted and sang excellently. Miss Gladys Black Roberts was a most dignified Lady St. Mallory, and Miss Lanning, Miss Crosse, and Mrs. Walker played the Society Girls with all the aplomb required for those parts.

Mr. Ronald Charteris, as Lord Cheyne, if anything, was even better than last year, playing very naturally and not overdoing the part. He was distinctly one of the successes of the evening, and his aviation verses to his song, "Algy," went down splendidly. Mr. Ellice Sassoon as M. de L'Orme was excellent. He was quite at home in all his songs, and his charming broken English was very cleverly maintained throughout. Miss Vera Yates, as Gretchen, and Mr. Dashwood Lang as Cupid, were most entertaining and amusing. Their ragtime dancing and singing of "Hitchy Koo" was undoubtedly the hit of the evening, being encored about five times. The leading ladies of the company were all presented with bouquets, and Mr. Lang was handed a propeller made of a cauliflower hub with brussels sprouts decorating the blades, a most appropriate gift, some thinking it a Dutch windmill, and others a propeller. The whole performance was exceedingly good. The episode of the twin Codys was a capital sell, and took in a great number of people. The scenery was beautiful. There were excellent audiences and the management ought to be able to hand over quite a handsome donation to the hospital.—R. DELACOMBE.



Leading Seaman Bateman, another of the successful Lower-Deck Pilots at Upavon, on an AVRO biplane.

Racing at Hendon to Begin Again.

The first flying race of the 1913 season will take place at the London Aerodrome, Hendon, on Saturday, February 22nd next, which is the concluding day of the Aero Show at Olympia. The event, which is timed for 3 p.m., will be a handicap with two preliminary heats of four laps, or six miles, and a final of six laps, or nine miles, around the measured course. The first prize for the race is the Aero-Show Trophy (value 60 guineas), presented by the proprietors of the London Aerodrome, together with 20 sovs., and the second prize is 10 sovs. Visitors to the show at Olympia will thus have an opportunity of seeing modern aeroplanes in a test of speed, piloted by some of the most skilful aviators of the day.

The Marske Accident.

The Public Safety and Accidents Investigation Committee of the Royal Aero Club.

Report on the Fatal Accident to Mr. Edward Petre, when Flying at Marske-by-the-Sea, on Tuesday, December 24th, 1912, at about 12.15 p.m.

Brief Description of the Accident.—Mr. Edward Petre, flying a Martin-Handasyde monoplane fitted with a 60-h.p. Antoinette motor, left Brooklands on Tuesday, December 24th, 1912, at about 9.10 a.m., with the intention of making a non-stop flight to Edinburgh. At about 12.15 p.m. he was observed approaching Marske-by-the-Sea, Yorkshire, from the direction of Saltburn. At that time a high wind was prevailing. After passing over the village of Marske-by-the-Sea the aircraft was at a height of about 500 ft., when it was observed to descend to about 400 ft. At this altitude the aircraft straightened out, then rose slightly, and subsequently dived to the ground, killing the aviator instantly. The aircraft was completely wrecked.

Report.—The committee sat on Wednesday, January 1st, Monday, January 6th, and Monday, January 13th, 1913, and received the report of the club representatives who visited Marske-by-the-Sea, together with evidence of eye-witnesses taken on the spot by them. Mr. G. H. Handasyde and Mr. H. P. Martin, of the firm of Martin and Handasyde, attended and produced plans of the aircraft and gave evidence on various points raised by the committee.

From the consideration of this evidence the committee regards the following facts as clearly established :—

(1) That the aircraft was built in November, 1912.

(2) That a very strong and gusty south-westerly wind was prevailing at the time of the accident.

(3) That the aircraft at the time of the accident was heading into the wind at an oblique angle, so as to cause its line of motion over the ground to be at right-angles to that of the wind, and its course was thus north-west.

(4) That from a height of about 500 ft. the aircraft, which had just previously passed over the village of Marske-by-the-Sea, descended about 100 ft., rose again, both wings collapsed, and the aircraft immediately fell to the ground. With reference to the collapse of the wings, no fewer than four witnesses who saw the accident from different points of view gave evidence that the wings collapsed in a downward direction.

(5) That a number of pieces of wood and fabric were picked up to leeward as far away as 300 yards from he scene of the accident, and in such positions that they must have fallen from the aircraft whilst still in the air.

Opinion.—The committee is of opinion that the accident was caused by the collapse of the wings of the aircraft in the air.

Recommendation—Seeing that this is not the first occasion on which wings of the Antoinette type have collapsed in the air, the committee recommends that the Royal Aero Club should vote a sum of money for the investigation of this design.

In this particular instance the aircraft was removed by the local authorities almost immediately after the accident, and any evidence which could have been obtained from the position or fractures of the parts was thereby lost. A good deal of the woodwork was burnt after the removal. The committee has already made a recommendation that steps should be taken by the authorities to prevent similar destruction of evidence in future.

In view of the above recommendation, the committee unanimously voted a sum of £20 to cover the cost of the investigation.

The following letter, dated January 24th, has been received from Mr. Martin, of the Martin-Handasyde firm. It is thought best to publish it without comment, as this unfortunate accident has already been discussed in this paper :—

"Sir,—Last night the Public Safety and Accidents Investigation Committee of the Royal Aero Club issued its report on the accident at Marske-by-the-Sea, in which Mr. Edward Petre lost his life while attempting a flight from Brooklands to Edinburgh.

"The gist of this report is that the wings of the monoplane collapsed downwards in the air, and the Committee have come to this conclusion solely on the evidence, and second-hand at that, of four persons who maintain to have seen this actually happen.

"Now, at the coroner's inquest, held on the spot and within a day of the accident, where the police were able to discriminate between what witnesses actually saw and what they thought they saw or excepted to see, a verdict was returned that the accident was due solely to the terrible wind that was blowing at the time Mr. Petre endeavoured to land—a higher wind probably than has ever been flown in before.

"It is curious that, though the Aero Club Committee had not only the same evidence before them as the coroner, but also the opportunity of verifying the strength and solidity of construction of the Martin-Handasyde monoplane, they should come to such a ridiculous conclusion.

"As a matter of fact, the Committee did not even take the trouble to pay a visit themselves or send a capable representative to our works at Brooklands to examine similar machines which we have there; and they show their utter and complete ignorance of the subject by bracketing the design and construction of our wings with those of the Antoinette monoplane, whereas they are, in point of fact, as dissimilar as possible.

"From a committee consisting of rival manufacturers, who would naturally know their business, we would have nothing to fear, but from one composed, with two exceptions perhaps, of gentlemen who are not engineers, and who certainly know nothing of practical construction, we are pained, but not very surprised, to have to put up with a report as nonsensical as it is unjust.—(Signed) H. P. Martin (per) E.M.F."

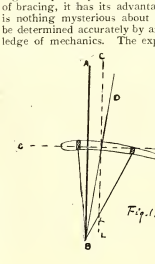
The Collapse of Wings in Monoplanes of the Antoinette Type.

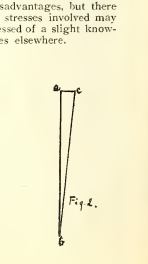
The recent fatal accident to Mr. Edward Petre, following Mr. Gilmour's death on a similar machine, and the long list of Antoinette fatalities, has again directed attention to the question of monoplane wing failures, and there can be little doubt that it will still further increase the already strong prejudice against monoplanes in general and large span king-posted monoplanes in particular.

The writer is personally one of those who prefer the biplane form of construction and who believes in the possibility of designing biplanes to meet all requirements; but he is not prejudiced to the extent of banning monoplanes as intrinsically dangerous. Hence this question of the failure, from no apparent cause, of monoplane wings has caused him much thought, the more so as until a satisfactory explanation is forthcoming it is impossible to feel certain that this form of weakness may not occur in other types of machine.

A fairly close acquaintance with the construction of Martin-Handasyde wings and some knowledge of the Antoinette is sufficient to assure one that the fault does not lie in any structural weakness of the wings themselves. The attachment of the wing bracing in the Antoinette was possibly open to suspicion; in the Martin-Handasyde there is room for none. Neither is there any doubt that the attachment of the roots of the spars to the body in the Martin-Handasyde was possessed of an ample margin of strength against all possible flying stresses.

A certain number look with suspicion on the method of bracing monoplane spars with king-posts. Like all other methods of bracing, it has its advantages and disadvantages, but there is nothing mysterious about it. All the stresses involved may be determined accurately by anyone possessed of a slight knowledge of mechanics. The explanation lies elsewhere.





Both the Antoinette and the Martin-Handasyde had a single mast supporting the lift wires. This mast passed down through the body of the machine between the butts of the front and rear spars. In both cases it was in front of the centre of gravity of the machine, and was braced forward only from the bottom of the nearly vertical front skid strut.

Now, if the point of support of all the lift wires is in front of the centre of lift of the planes, that point of support is subjected not only to the lift, but to a backward pull. In Fig. 1, A B represents the mast. The intersection of the two dotted lines C L is the position of the centre of lift. Then, whatever the actual position of the lift wires, the line B D gives the direction of the resultant force on the base of the mast. In the triangle a b c (Fig. 2) the vertical line a b represents the weight of the machine, b c, parallel to B D, the resultant force on the mast base, and a c (horizontal) gives the backward pull on the mast.

Assuming a machine of a total weight of 1,750 lbs. with a height from the base of mast to the centre of lift of 6 ft., then if the centre of pressure were 2 ft. behind the mast, the value of the backward pull on the mast would be $2 \cdot 6 \times 1750 = 583$.

The centre of pressure might easily move as far back as this when diving, and under these conditions the backward pull on the mast might be applied suddenly, when it would produce double the stresses due to a steady load of the same magnitude. Speaking from memory of the dimensions of the Martin-Handasyde mast, and the absence of any important forward bracing, this seems sufficient to account for the mast whipping backwards and buckling.

Such movement backward of the lift wires would pull the front spars down and let the rear spars up on both wings, and would lead to a very large negative pressure, increasing towards the tips of the wings, accounting for the downward collapse which appears to be the characteristic of these wing failures.—W. H. S.

The Use of Four-Bladed Propellers.

The reasons for using a four-bladed propeller are as follows:—

When a high-powered engine is used with a slow speed propeller [By "slow speed" Mr. Flanders presumably means 1,000 to 1,300 r.p.m.—Ed.] the first difficulty that is met with is the question of the large propeller diameter necessitating a high wheel-base. For equal strengths the weights of a wheelbase rise approximately as the cube of the height, hence a reasonably small diameter of propeller is essential. The limiting condition of height of the wheelbase is the angle of the bracing wires of the planes; when this has been fixed it is usual to endeavour to get a satisfactory propeller within this dimension. It is usually found to be too small, hence it is necessary to use either an excessively high pitch or an unreasonably wide blade, both these decreasing the efficiency considerably. The alternative is to use a four-bladed propeller, which will absorb the power in an efficient manner at low speeds. The pair of crossed two-bladed propellers seems to be the most satisfactory, and certainly the strongest job, though where the revolutions are high the interference is probably worse than in the case of a four-blade propeller made in one by halving each lamination at the boss.

I believe that up to the present it has been found undesirable to use a four-blade propeller at speeds above 1,100 revs., though this must depend to some extent on the pitch.

Lanchester gives the formula,—

$$N = 2.5 \frac{(R_o + R_1)}{(R_o - R_1)}$$

where—

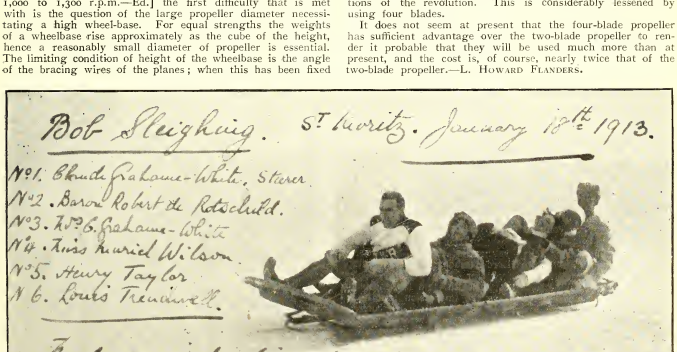
N = Number of blades.
R_1 = Inner radius of blades.
R_2 = Outer radius of blades.

As in modern propellers, R_1 is always very small, practically = 0, the result of the formula is that 2.5 is the correct number of blades. I would, however, prefer to think that the pitch was of greater importance in the number of blades than the radius. At any rate, the construction of a propeller having 2.5 blades would be a problem of sufficient difficulty to amuse the mathematicians, who approve of that number, for some time.

Another advantage of a four-blade propeller is the fact that the speed of the tip is kept lower than in the case of a large diameter two-blade propeller. There is without doubt a tendency to get discontinuity in the flow of air over the tip of high-speed propellers, hence many enthusiastic supporters of high-speed large-diameter two-blade propellers make the section of the blade at the tip very thin, which is liable to cause whip. I have come across several instances where removing 6 in. from the tips of a large propeller has resulted in a marked increase in efficiency sometimes unaccompanied by any considerable increase in revolutions.

With two blades there is a serious tendency in large diameter propellers to set up vibration when turning, or at any time when the conditions of the air are not uniform throughout the whole disc area, due to the pressure per square foot being unequal on each blade during certain portions of the revolution. This is considerably lessened by using four blades.

It does not seem at present that the four-blade propeller has sufficient advantage over the two-blade propeller to render it probable that they will be used much more than at present, and the cost is, of course, nearly twice that of the two-blade propeller.—L. HOWARD FLANDERS.



"When celestial pleasures fade."

The I.C.S Presentation to the Nation.

It will be remembered that in June, 1912, the International Correspondence Schools organised an extensive educational demonstration of aviation in order to arouse the attention of their students to the importance of aviation to the nation. This consisted of an aerial tour of Great Britain in a Blériot monoplane, piloted by Mr. Robert Slack, a student of the schools. Later a subscription was opened whereby the students could contribute to the purchase of this aeroplane in order to present it to the nation.

In all, the distance covered, counting exhibition flights, was upwards of 1,700 miles. A most noteworthy feature of this aerial tour was that it was carried through without a single mishap either to pilot or machine.

The second part of the scheme—the subscription whereby students in every part of the British Empire could contribute toward the purchase of the aeroplane—was responded to with enthusiasm. The maximum subscription was fixed at 1s. The list of subscribers is interesting. Many Chinese names appear among the students in the Straits Settlements and Federated Malay States. There are Dutch names from South Africa, and a satisfactorily large proportion of Indian students. The widespread and patriotic interest aroused among the students is indicated by the list of countries from which subscriptions were received. These are as follows:—England, Scotland, Ireland, Wales, Mysore, Cape Colony, Uganda, New South Wales, Tasmania, British North Borneo, Rhodesia, Upper India, Central India, Bombay, Transvaal, West Africa, Mauritius, Queensland, South Australia, New Zealand, Malacca, Malta, Madras, Nyassaland, Egypt, S. Australia, Victoria, Singapore, Penang, Aden, Calcutta, Burma, Orange River Colony, Natal, Soudan.

These should surely prove not only the great interest in aviation among the intelligent minority of the community, but the wide scope of the I.C.S.

On Tuesday last, January 28th, Lord Desborough introduced to Colonel Seely at the War Office a deputation representing the International Correspondence Schools, which officially presented to the Army the Blériot monoplane on which Mr. Slack made his great tour. Lord Desborough tendered thanks to Colonel Seely for accepting the machine, and said that the subscription was fine testimony to the loyal spirit of the rising generation. Germany had already publicly subscribed £350,000 for aeronautics, and France had given £150,000. England no doubt lagged behind, but if the Government indicated that a similar movement would be acceptable, the example of those countries would be followed. Mr. W. T. Rowlett, Colonel de Salis, and the Rt. Hon. Sir Joseph Ward, late Prime Minister of New Zealand, also spoke.

Colonel Seely tendered cordial thanks on behalf of his Majesty's Government and the War Office and hoped it would be possible to use the machine as a weapon in the field. He was glad to see representatives of all the self-governing colonies joining to make a gift to the State, and he tendered thanks to the thousands who had given their small sums. He was puzzled to know why the I.C.S. should be before all others with such a gift, and said it showed the students were evidently alive, alert, and patriotic. This deputation was unique, because all others he had received asked him for money. Far be it from him to stand in the way of a patriotic gift, but he did not want to write over the War Office, "Supported entirely by voluntary contributions."

Afterwards, lunch was partaken of at Westminster Palace Hotel, at which Mr. Seitz, the head of the I.C.S. Organisation, presided. He thanked Lord Desborough for his interest in the I.C.S., and Colonel Seely for being present. Colonel Seely, replying to the toast of his health, said the enthusiasm with which it was received gave the impression that he had made the presentation instead of receiving it. He congratulated Mr. Slack on covering the 1,700 miles without accident, and announced that the War Office had made a great advance in the science of aviation. The number of people who had subscribed for this machine would do much to stimulate interest through the Empire. He would ever remember the generosity of the gift, and wished the students of the I.C.S. every success.

Sir Joseph Ward, Lord Desborough, Lord Montagu of Beaulieu, and Mr. Robert Slack also spoke, Mr. Slack remarking that as a patriotic Englishman he was distressed at the state of the aeroplane industry in this country. We had no pilots and no machines in case of war, and he could not understand why this should be.

The Wrecks at Brooklands.

The ancient machines at Brooklands seem to have aroused considerable interest. The following are two of the letters received on the subject:—

"Referring to the article on the wrecks at Brooklands in the December 28th issue of your most instructive and interesting journal, may we take this opportunity of suggesting a useful destination for them? There must be, we feel sure, many others who, like ourselves, are keenly enthusiastic on aviation, but not having sufficient means (by a very long way) cannot carry out their ideas and innovations. We are in absolute agreement with your correspondents, Messrs. Westwood and Dawes, inasmuch that these so called wrecks should be either given away or at least sold very cheaply. Also, like them, we would be overjoyed to obtain two or even one of the best of these, though it incurred pushing it from Brooklands to Southend in a snow-storm. We would esteem it a great favour if you would put us into communication with the parties responsible for them.—R. C. Jenkins and H. C. Statham, Southend-on-Sea."

"It was with much interest that I read the letter from Messrs. Westwood and Dawes in this week's issue of The Aeroplane, and I heartily applaud them for constructing a machine, and in such a small workshop, too. I myself have tried to get fellows to club together and to form an aero club, but I regret to say that not one was sufficiently interested in aviation to go to the lengths of forming, or trying to form such a club. I also side with them in saying that something ought to be done with the 'three old machines' down at Brooklands. I have written several times to the authorities of the aerodrome with regard to these machines, and have been told to whom they belong, but I have had no reply to my letters which I wrote to the gentlemen whom these machines belong to. Why? As a matter of fact I offered a really good price for the 25-h.p. Anzani Blériot, and even then I had no reply. The 'old Avis' is well worth investing in, if its present owner could be persuaded to part with it, as it is fitted with an E.N.V. engine of some 30 h.p., and I am told that at one time it was one of the best fliers at Brooklands. I should like to get into communication with Messrs. Westwood and Dawes, as I may be able to give them some help with regard to the machines mentioned above.

"I heartily wish I could get some fellows to join me who live in the S.W. district, for if I did there would soon be some flying going on round about here. If you can see your way to put my letter in print it might catch the eye of some 'amateur aviator,' in which case, if he were to communicate with me he might very soon be putting his hand on the control wheel if he wished.—Alec Freston, Clapham."

[If those responsible for these old machines, or any others which are going very cheap, care to approach the writers of the above letters their communications will be forwarded.

In relation to the above letters, it should be noted that the late Mr. Gilmour's old Blériot, "The Bat," was given under his will to his old school, Clifton College, but apparently, for some reason or other, its delivery to Clifton was considerably delayed. It is understood, however, that the machine is now being sent there.]

Standard Controls on Army Aeroplanes.

Mr. J. B. Lucas writes:—"I was much struck by the paragraph in W. E. de B. W.'s article on military machines, referring to universal control for army aeroplanes. I am surprised to find that the subject had not been mentioned before in your columns.—[It has, at considerable length.—Ed.]—I firmly believe that several fatal accidents to army men have been due to the fact that the pilots have been expected to fly any type of machine at a few hours' notice, whether used to the machine or not. The death of the late Lieut. Cammel at Hendon last year was due directly to this cause, as the late officer, used to the controls of a Blériot monoplane, apparently made a mistake, owing to the similarity between the control levers of the Valkyrie monoplane, which, although similar in position to those on a Farman, are worked differently. It appears to be a fairly easy matter to standardise the controls of all the monoplanes and also of biplanes, so that when an officer learns to fly on a Blériot he would be able to control any other monoplane in the same way, or if he learned on a Farman biplane he would be able to control any other biplane. I should like to read the views of others on this subject, as I think there is room for improvement."

The Propeller which Crossed the Alps.

In his flight over the Alps M. Bielovucic used a Chauvière Integral propeller.

The Staff of the Central Flying School.



NAMES READING FROM LEFT TO RIGHT LOOKING AT PHOTOGRAPH. *(By Gale & Polden, Aldershot)*

Front Row Sitting Down :—Capt. J. M. Salmond, Capt. E. G. R. Lithgow, R.A.M.C., Major E. L. Gerrard, R.M.L.I., Eng.-Lieut. C. R. J. Randall, R.N., Capt. J. D. B. Fulton, R.F.A., Capt. G. M. Paine, M.V.O., R.N., (Commandant), Major H. M. Trenchard, D.S.O., Lieut. A. M. Longmore, R.N., Lieut. and Q.-M. F. H. Kirby, V.C., Asst.-Paymr. J. H. Lidderdale, R.N.

First Row Standing :—Sergt. J. Baker, Chief Mech. H. Scott, Sergt. O. Williams, Master Mech. W. G. Colman, Sergt.-Major A. Levick, Master Mech. T. O'Connor, Sergts. A. Turner, H. T. Copeland, Chief Mech. A. H. Baker, Sergt. J. Chipperfield.

Second Row Standing :—Air Mechs. V. Higginbottom, J. McDonald, R. Bright, C. Edwards, Sergts. H. Vagg, W. Stafford, C. Jarvis, J. Rigby, A. Jukes, F. McElwee, Air Mechs. J. Yorkston, W. Butcher.

Third Row Standing :—Air Mechs. G. Wooltorton, F. Adams, G. Thornton, C. Davis, W. Smyrk, T. Bosworth, (—), A. Attree J. W. Johnson, F. Whilton, F. Gardiner, W. Turner, R. Collis, W. Harrison, J. Clarke.

Fourth Row Standing :—Air Mechs. F. Ede, P. Sanders, F. James, G. Savill, L. Willshire, A. Webster, E. Cole, A. Cowton, A. Lindon, C. Gilbert, W. Power, A. Middleton, A. Baldock, C. Yabsley, T. O'Reilly, H. J. Lloyd.

Fifth Row Standing.—Air Mechs. T. Warner, A. Cox, A. Bell, A. Booth, D. Benyon, B. Bates, T. Strong, H. Butt.

The Week's Work.

MONDAY, January 20th.

Hendon.—At Aircraft Co., Mr. Verrier testing new Maurice Farman; motor trouble forced him down after half an hour.

TUESDAY, January 21st.

R.F.C., Farnborough.—Strong west wind, very gusty and cloudy. No flying in early morning. About noon, Caudron biplane taken out by M. René Caudron, who made one fine circuit at about 3,000 ft., machine flying well, but much bumped about by gusts, finished with splendid glide and landing. Conditions too bad for further flying.

Hendon.—At Aircraft Co., M. Verrier testing Maurice Farman for one hour, despite treacherous wind.

WEDNESDAY, January 22nd.

R.F.C. Central Flying School.—Fresh easterly wind. Very bumpy. Snow falling nearly all afternoon. On Avro 406, Capt. Fulton, R.F.A., with Lieut. Marks 5 mins., with Lieut. Holt 15 mins., with Lieut. Read 15 mins., with Capt. Mellor 20 mins., with Lieut. Rathborne 15 mins., with Lieut. Littleton 10 mins.; Air Mechanic Higginbottom, passenger-carrying, with Ldg. Seaman Marchant 8 mins., with Sergt. Goodchild 5 mins. On Avro 404, Air Mechanic Higginbottom with Air Mechanic Smyrk 20 mins. at 1,400 ft., with Stoker Keen 5 mins., with Ldg. Seaman Marchant 5 and 10 mins., with Air Mechanic Baldock 5 mins., very good day's performance. Capt. Fulton with Lieut. Small 15 mins. On Maurice Farman 403, Air Mechanic Collis 20 mins.; Lieut Conran 12 mins.; Lieut. Boyle 10 mins.; Captain Millar 11 mins., Lieut. Harvey 15 mins, Lieut. Marix 20 mins., Lieut. Warter 16 mins. Air Mechanic Collis for second half of brevet, doing fine performance at 1,800 ft., with excellent banked turns in spite of bumpy wind. Time 18 mins. and landing right across mark. On Maurice Farman 411, Lieut. Longmore, R.N., with Lieut. Conran 17 mins., with Lieut. Harvey 12 mins., with Lieut. Marix 18 mins., with Lieut. Warter 16 mins., with Lieut. Ross 14 mins., with Lieut. Kennedy 15 mins. On Maurice Farman 418, Capt. Millar 9 mins. On B.E. 416, Capt. Salmond with Lieut. Bigsworth 30 mins., with Capt. MacDonell 20 mins., with Lieut. Lewis 40 mins. On B.E. 417, Lieut. Arthur 20 and 10 mins.; Capt. Salmond with Lieut. Gibson 20 mins., with Lieut. Soames 27 mins. On Short 401, Major Gerrard, R.M.L.I., Lieut. Roupell 8 mins., with Lieut. Glanville 6 mins., with Lieut. Oliver 10 mins.; Lieut. Roupell 7 mins. On Short 402, Lieut. Glanville 10 mins.; Major Gerrard with Lieut. Unwin 5 mins. On Henry Farman 420, Major Gerrard with Capt. Tucker 7 mins., with Lieut Watkins 3 mins. Major Brooke-Popham arrived from Lark Hill on B.E. 203, with Lieut. Cholmondeley as passenger, but snowstorm prevented return.

R.F.C., Farnborough.—Slight mist in early morning, cold light wind N.W. by W. On Bréguet 210, Major Raleigh 6 mins. at 100 ft., later on same machine Lieut. Wanklyn straights and circuits, one at 600 ft., then Major Raleigh circuit with Sergt. Hunter as passenger and again with Capt. Darbyshire for 20 mins. at 2,000 ft. Capt. Beor straights on Bréguet 213 and circuit at 200 ft.; then Lieut. Chinnery took over and did good straights. Lieut. MacLean did first straights, after which Capt. Beor taxied same machine for 10 mins. On Bréguet 211, Lieut. Shephard for 13 mins. at 1,400 ft., then with Sergt. Lamen 10 mins. at 1,500 ft., with Sergt. Nicholls 20 mins. at 2,000 ft., with Sergt. Storey 14 mins. at 1,500 ft. and with Mechanic Ankrett 12 mins. at 2,300 ft. In afternoon Major Raleigh on Bréguet 213 8 mins. at 500 ft. Mr. Cody also tested new biplane in morning, and Mr. de Havilland made short flight on new war-plane. M. Caudron put biplane through tests with passenger, and did good flying in this very small machine.

Airship "Gamma" out under Commander Masterman, R.N., piloted by Lieut. Usborne, R.N., made trip over Bordon and then flew to London, touching Croydon and returning over city, flying low near Blackfriars Bridge, taking about 2 hours for trip.

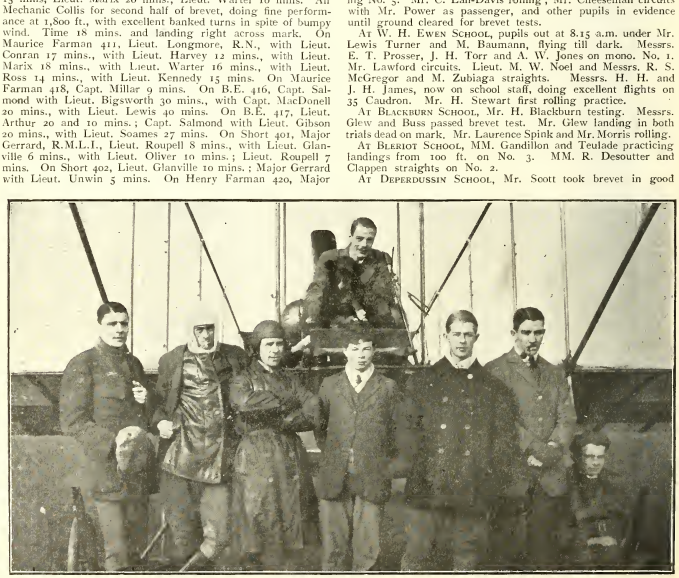
Hendon.—At Grahame-White School.—Mr. Manton testing No. 5. Mr. C. Lan-Davis rolling; Mr. Cheeseman circuits with Mr. Power as passenger, and other pupils in evidence until ground cleared for brevet tests.

At W. H. Ewen School, pupils out at 8.15 a.m. under Mr. Lewis Turner and M. Baumann, flying till dark. Messrs. E. T. Prosser, J. H. Torr and A. W. Jones on mono. No. 1. Mr. Lawford circuits. Lieut. M. W. Noel and Messrs. R. S. McGregor and M. Zubiaga straights. Messrs. H. H. and J. H. James, now on school staff, doing excellent flights on 35 Caudron. Mr. H. Stewart first rolling practice.

At Blackburn School, Mr. H. Blackburn testing. Messrs. Glew and Buss passed brevet test. Mr. Glew landing in both trials dead on mark. Mr. Laurence Spink and Mr. Morris rolling.

At Blériot School, MM. Gandillon and Teulade practicing landings from 100 ft. on No. 3. MM. R. Desoutter and Clappen straights on No. 2.

At Deperdussin School, Mr. Scott took brevet in good



At Brooklands.—Left to right: Mr. Hall, Lieut. Blatherwick, Mr. Merriam (chief pilot Bristol School), Mr. Archer, Mr. Nevile, Lieut. Crawford-Kehrmann, and Mr. Bendall (assistant pilot). Seated in machine, Lieut. MacLean.

style at 250 ft., landing well first time 15 ft. second time 30 ft. from observers. Later, Lieut. Hordern two hours' practice on No. 3.

AT AIRCRAFT COMPANY, Maurice Farman with Mr. Verrier and passenger left for Farnborough, arriving there in 35 mins. Continued to fly an hour, reaching 4,500 ft., shut off motor completely, stopped propeller, and planed for just over 12 mins. Then passed remaining tests before handing over to Royal Aircraft Factory officials.

Brooklands.—AT VICKERS SCHOOL, Capt. Wood and Mr. Barnwell doing straights on Farman before breakfast, testing for adjustment. In afternoon Mr. Knight out testing Farman biplane and No. 3 monoplane.

Salisbury Plain.—AT BRISTOL SCHOOL, M. Jullerot on monoplane 50 mins. Mr. England 30 mins., and Mr. Harrison 10 mins.

THURSDAY, January 23rd.

Hendon.—AT GRAHAME-WHITE SCHOOL, Mr. Munton on No. 6 machine, pupils passengers. M. Desoutter on Blériot.

FRIDAY, January 24th.

R.F.C., Central Flying School.—Very strong westerly wind, some rain. On Avro 406, Capt. Fulton, R.F.A, 5 mins.; and on B.E. 416, Capt. Salmond, 7 mins., both officers finding weather too bad for pupils.

R.F.C., Farnborough.—Wind very strong. S.S.E., about 35 to 40 m.p.h., bumpy and cloudy. On B.E. 206, Lieut. Lawrence, 5 mins. at 500 ft. Weather too rough for further flying.

Brooklands.—AT VICKERS SCHOOL, Mr. Barnwell made few circuits in afternoon in 30 m.p.h. wind on No. 5 monoplane to test compass.

SATURDAY, January 25th.

R.F.C., Central Flying School.—Fine, misty at times; fresh, bumpy, westerly wind. On Avro 406, Capt. Fulton, R.F.A., with Lieut. Marks 25 mins., with Lieut. Rathborne 10 mins., with Capt. Mellor 10 mins., with Lieut. Holt 10 mins., with Lieut. Small 10 mins., with Lieut. Littleton 10 mins.; Air Mechanic Higginbottom with Sergt. Goodchild 5 mins. On Avro 404, Captain Fulton 5 mins., with Lieut. Read 10 mins. Then Air Mechanic Higginbottom put in good morning's work passenger-carrying, taking Leading Seaman Marchant 6 20 mins. and 12 mins. to 1,400 ft., and being lost some minutes in mist; with Sergt. Goodchild 20 mins., with Air Mechanic Smyrk 5 mins., with R.N.A. Downton 5 mins., with Air Mechanic Clarke 5 mins. Higginbottom is very safe and steady pilot, nearly everyone willing to trust themselves with him on fast Avros. On Maurice Farman 403, Lieut. Harvey twice 15 mins.; Lieut. Marix 10 and 17 mins.; Lieut. Warter 10 mins. On Maurice Farman 411, Lieut. Longmore, R.N., with Lieut. Ross 20 and 18 mins., with Lieut. Kennedy twice 20 mins., with Sergt. Stafford 11 mins. and 20 mins., with Air Mechanic McNamara 6 mins. On Maurice Farman 413, Master Mechanic T. O'Connor 8 mins., Assistant-Paymaster Liddeldale 8 mins., Engineer-Lieut. Randall 20 mins. On Maurice Farman 418, Lieut. Boyle 10 and 13 mins.; Lieut. Conran 11 and 12 mins.; Capt. Millar 13 and 9 mins. On B.E. 416, Capt. Salmond 5 mins. alone, with Lieut. Vernon 25 mins., with Lieut. Burrough 35 mins., with Lieut. Bigsworth 15 mins., with Lieut. Gibson 15 mins. On B.E. 417, Lieut. Arthur 17 mins. and 30 mins. at 1,800 ft. On Short 401, Major Gerrard, R.M.L.I., with Lieut. Bowhill 11 mins., with Lieut. Oliver 25 mins., with Sergt. Wright 14 mins.; Lieut. Roupell 15 mins. On Short 402, Lieut. Glanville 10 mins.; Major Gerrard with Lieut. Unwin 15 mins., with Lieut. Oliver 25 mins.

R.F.C., Farnborough.—A clear sunny morning, with fresh wind from the west, about 15 to 20 miles per hour, bumpy. On Bréguet 211 Lieut. Shephard 5 mins. at 300 ft. On Bréguet 210 Sergt. Hunter with Capt. Board as passenger 10 mins. at 500 ft., then with Capt. Judge 10 mins. at 600 ft., and with Major Davidson 10 mins. at 700 ft. Lieut. Lawrence for two straights on new B.E. 303 with staggered planes. On B.E. 206 Lieut. Joubert de la Ferté, 15 mins. at 500 ft.

Hendon.—AT W. H. EWEN SCHOOL, 8.30 a.m. on 35-h.p. Caudron, Lieut. Bayly and Mr. M. Zubiaga straights. M. Baumann's pupils on Mono. No. 2; Messrs. H. Stewart and A. W. Jones straights. Mr. Lewis Turner capital exhibition on 60-h.p. two-seater Caudron, and busy carrying passengers till dark, taking among others Commander Schwann, R.N., round surrounding country.

AT DEPERDUSSIN SCHOOL.—No. 4 tested by Mr. Brock, handed over to Mr. Valazzi, who did straights and first circuit, doing three. Lieut. Hawker straights on No. 3.

Brooklands.—AT VICKERS SCHOOL, in afternoon Messrs. Barnwell and Knight on No. 5.

AT BRISTOL SCHOOL.—Messrs. Bendall and Merriam out in forenoon; latter with Mr. Archer; pupil then alone.

Liverpool.—WATERLOO SCHOOL inactive for past month, and profiting by opportunity, Mr. and Mrs. Melly went to winter sports at Wengen, whence they have just returned. Messrs. Melly and Birch short flights on "Y" machine in puffy wind; other aviators present, Lieut. Mapplebeck and Mr. Hardman.

Salisbury Plain (BRISTOL SCHOOL).—M. Jullerot, trial. Mr. England on mono. for 15 mins; Mr. Smith-Barry half-hour; Mr. Dacre; Mr. Harrison with Mr. Tower; M. Jullerot in 80-h.p. mono; and Mr. England.

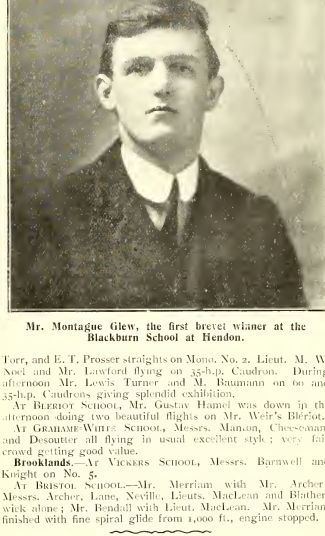
SUNDAY, January 26th.

Hendon.—AT W. H. EWEN SCHOOL.—School 9.20 a.m. under Mr. Lewis Turner and M. Baumann. Messrs. H. Stuart, J. H.





Mr. and Mrs. Grahame-White "Winter Sporting" at St. Moritz.



Mr. Montague Glew, the first brevet winner at the Blackburn School at Hendon.

Torr, and E. T. Prosser straights on Mono. No. 2. Lieut. M. W. Noel and Mr. Lawford flying on 35-h.p. Caudron. During afternoon Mr. Lewis Turner and M. Baumann on 60 and 35-h.p. Caudrons giving splendid exhibition.

At Blériot School, Mr. Gustav Hamel was down in the afternoon doing two beautiful flights on Mr. Weir's Blériot.

At Grahame-White School, Messrs. Manton, Cheeseman, and Desoutter all flying in usual excellent style; very fair crowd getting good value.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight on No. 5.

At Bristol School.—Mr. Merriam with Mr. Archer; Messrs. Archer, Lane, Neville, Lieuts. MacLean and Blatherwick alone; Mr. Brandt with Lieut. MacLean. Mr. Merriam finished with fine spiral glide from 1,000 ft., engine stopped.

The Week-End at Hendon.

A strong northerly wind at midday on Saturday threatened to interfere with the afternoon's sport, but fortunately it eased off to a steady draught before flying time, and so a large concourse of interested spectators had their confidence justified.

Mr. Manton, who took up several passengers during the afternoon, handled the Grahame-White biplane with his usual dexterity, and Mr. Lewis Turner, who also had his quota of passengers, showed off the wood-stained 60-h.p. Caudron to great advantage. The Blackburn monoplane was not up this day, as Mr. Harold Blackburn is in the future to pilot a machine with a 100-h.p. Gnome. The ascent of this machine will be watched with considerable interest.

Undoubtedly the feature of the afternoon's flying was a superb demonstration by M. Desoutter on his 50-h.p. Blériot. One of his earlier flights was brought to a somewhat abrupt and alarming termination by a broken petrol pipe, but as though to make up for this mishap he kept the machine in the air, after the fault had been repaired, for nearly three-quarters of an hour, flying in splendid form, performing the most intricate evolutions, appalling the uninitiated with banked turns, circling to a great height, then diving almost to the ground, picking up and roaring past the grand stand low down to the manifest delight of his enthusiastic audience.

This sort of thing is worth going out for to see; dusk finds the spectators unwilling to disperse.

On Sunday, M. Desoutter was up as usual, and excellent exhibitions were given by Messrs. Manton and Cheeseman, who were out on the Grahame-White biplane, while Mr. Turner again took out the 60-h.p. Caudron. An additional attraction was provided by Mr. Hamel in a Blériot, and it is hoped that more will be seen of him at Hendon.

Aviation in Ireland.

The secretary of the Royal Aero Club reports that, at the request of the Aero Club of Ireland, he visited Dublin on Saturday last and inspected a ground proposed for a flying school, and that in his opinion the ground was not large enough for the purpose. His report to this effect was confirmed.

The Disappointments of Commerce.

The following specimen of the disappointments to which a keen business man is liable has been sent by the secretary of one of our leading aviation firms. The cashier of a certain firm wrote to his managing director—"Re account owing by Mr. ——, April, 1910, £7 7s. Dear Sir,—I have written to the above on four occasions, but our letters have been entirely ignored; on the — March I placed the matter in the hands of the Wholesale Traders' Association, and he has ignored their application. Shall I instruct the Association to proceed, i.e., issue a summons for recovery? I shall be pleased to receive your instructions with regard to this matter."

The reply was as follows:—"This man is now dead—he committed suicide in a Turkish bath a fortnight ago. I fancy he is bankrupt. Don't press him." The reasons seem adequate.

Found—one American Frigate.

History is well taught in Italian schools. On November 27th last an Italian dirigible, while making observations in the neighbourhood of Tripoli, located a submarine wreck. The pilot, remembering that the American frigate "Philadelphia" had been sunk in that vicinity so recently as 1804, imparted his discovery to the U.S. Military attaché at Rome, who set off post haste for Tripoli.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.

For the convenience of Advertisers, replies can be received at the office of The Aeroplane, 166, Piccadilly, W.

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ADVICE FREE on Patents and Trade Marks. Handbook gratis.—KING, Registered Patent Agent, 165, Queen Victoria Street, London.

"HOW TO TAKE OUT PATENTS IN ENGLAND AND ABROAD." (By Arthur E. Edwards, F.C.I.P.A.) 28. post free.—Arthur Edwards and Co., Ltd., Patent Agents and Consulting Engineers, Chancery Lane Station Chambers, W.C. 'Phone 4536 Holborn.

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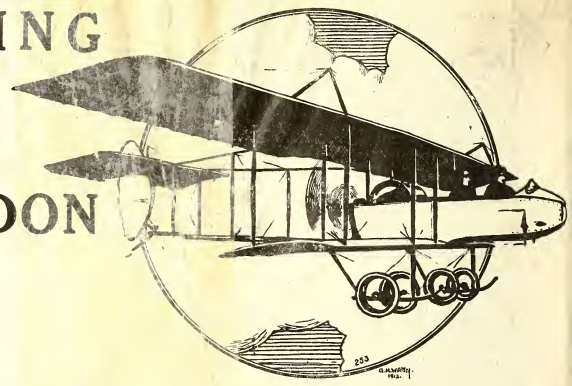
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Aero Show Speed Contest. (*Weather Permitting*).

A Grand Speed Handicap will be held on Saturday, February 22nd, at 3 p.m. for, the AERO SHOW TROPHY, value 60 GUINEAS, and 30 SOVEREIGNS IN CASH PRIZES, presented by the Grahame-White Aviation Co., Ltd. Entry Forms on Application.

Easter Arrangements.

The 4th London Aviation Meeting will be held during the EASTER HOLIDAYS, FRIDAY, MARCH 21st, to EASTER MONDAY, MARCH 24th. Speed and Altitude Competitions for Prizes will take place each day (weather permitting). Further particulars will be announced later.

Flying Race Meetings

Will be held every SATURDAY and BANK HOLIDAY throughout the forthcoming Season. Arrangements will be announced from time to time in the Aeronautical and daily and evening Press.

Flying Daily (*Weather Permitting*).

Special Exhibition Flights, Speed and Altitude Tests by well-known Aviators every THURSDAY, SATURDAY and SUNDAY afternoon (2.30 p.m. till dusk). Admission to Enclosures, 6d., 1s. and 2s. 6d. (Paddock). Children under 10 years, Half Price. Motors 2s. 6d. (includes Chauffeur). The London Aerodrome at Hendon is situated in delightful open country (6½ miles from Marble Arch), and is easily reached by Tube or 'Bus. Season Tickets, £2 2s. (Admits to Paddock).

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West End Offices: 166 Piccadilly, W. *'Phone: MAYFAIR 5955. Wires: "CLAUDIGRAM, LONDON."*

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THE AEROPLANE

1d WEEKLY

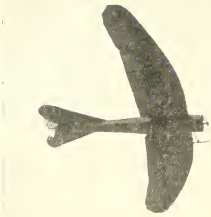
Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, FEBRUARY 6, 1913. No. 6.

ABOVE THE SNOWS.



Mr. Claude Grahame-White flying a Farman biplane (70-h.p. Gnome engine) above S. Moritz, January 28, 1913.



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Aeronautical Nomenclature.

At the commencement of his interesting and amusing lecture to the Aeronautical Society last week Mr. Mervyn O'Gorman referred to the need for further attention on the part of the Society to the subject of nomenclature. It is always a pleasure to be able to agree with Mr. O'Gorman, so I beg to place on record my humble opinion that "something ought to be done about it."

Laxity of language is one of the most common failings of the average person indigenous to aerodromes. As a rule his vocabulary is large, varied, and forcible, while the incorrectitude of its use is at once ingenious and astonishing. Also, those not actually connected with the aerodromes, but who are what the French graphically describe as "fervents of aviation" have, with the assistance of the daily Press, evolved a weird pseudo-aeronautical language of their own which is enough to bemuse the intelligent observer who fondly believes the whole English language to be contained within the six covers of Johnson, Webster, and Nuttall.

To the latter class belong such phrases as "He volplanes better than any airman I've seen"; but after all, is the perpetrator of such a sentence more philologically culpable than the real pilot who says to his mechanics: "Bung out the 'bus and let's go and do stunts"?

In the early days, when everything connected with aviation was French, and when English terms for the operations of flying had not been formulated, it was quite the proper thing to talk a kind of Anglo-French jargon, as, for example, the classic instance of the proud semi-proprietor of a biplane who informed me regretfully that "the blooming appareil hadn't sortied from its hangar for a month" because it had "casséed its amortisseurs and done in its chassis." There was then some excuse for talking of a "vol plané" because it connoted distinctly the idea of a planing flight while the engine was stopped. Gliding on aeroplanes without engines at that time threatened to become a sport on its own account, so to speak merely of a glide was open to misconstruction. To-day gliding is almost as extinct as the pterodaetyl, and in the meantime the average artist who composes school reports has formed the habit of calling any kind of direct descent a "vol plané," even if the engine is pulling all out the whole time. Therefore it is just as well to adopt the word glide for the operation of descending after the engine has stopped.

The word "hangar," which may, in this country, suffer all possible oral variations between hang-gar, hanger, hang-ger, anger, and ong-garrr, seems to be falling into a state of innocuous desuetude, and is being replaced by the common word shed, which does well enough. But, on the other hand, "fuselage" seems to be staying on, whether with the purely English pronunciation of fewseldige or with the sound of foozelarje, which is about as near as the average Englishman can get to the French.

Chassis is also a word which seems likely to survive, largely because of its use in another sense by motoring folk. The favourite method of pronunciation is shassy, though some Anglo-Saxon purists argue that if we adopt the word we may as well Saxonise the sound, and so call it tchassiss. Others, however, discard the word altogether and call the thing a landing-carriage or even a wheel-base, the latter being about as astonishing a misnomer as one could invent. Aileron, a pretty and simple word, is still used generally by pilots and mechanics, though more scientifically-minded people call these articles stabilisers, or balancing-flaps, neither term sounding nicely nor being particularly informing in itself.

Writing of fuselages suggests the question: When is a fuselage not a fuselage? As a rule the term is applied to the shuttle-shaped body of Blériot type to distinguish it from the tail-boom arrangement of the Farman, but now it is often used to describe the cased-in body of the new Farmans, known in France as "capote." Strictly speaking this form of body work is sufficiently shuttle-shaped to warrant its being called a fuselage, but it is a trifle confusing if one does so, therefore it might be better to keep the word for the type of body which has the rudder and tail planes fixed to its end.

Mr. O'Gorman, ever ingenious, habitually divides aeroplanes into the B., F., and S. types; these being the tractor type, which he ascribes to Blériot; the propeller type, which he credits to Farman; and the tail first, "canard," or "duck," type, for which he makes Santos-Dumont responsible, the letters in each case standing for the initials of the alleged inventors. It seems to me more reasonable to call the first the "A" type, after Ader, the first of all power-fliers, and the second the "H" type, after Henson, whose model had propellers, though it would be even better to call it the "V" type, after Voisin, who antedated Farman. And surely that with a leading elevator and minus a tail should be called the "W" type, for the Wrights were years in front of Santos. Still, despite either Mr. O'Gorman or me the average

man will probably continue to refer to the three as "tractor," "propeller," or "canard types."

Certainly, as Mr. O'Gorman suggested, we do need some term to replace the word "drift," which is needed for use in its nautical sense. "Lift and drift" gives almost a poetical sound to a mathematical discourse when delivered in the mellifluous tones of a Handley Page, and the word "drag," with the full Celtic value of the "r" in it, as advocated by Mr. Low, may not be so euphonious, but, like all onomatopœic words, it expresses itself forcibly. "Head resistance" is more specific, but it is cumbersome, especially to the scientist who loves to express himself in symbols and would rather lay the whole Chinese idiography under contribution than lose a chance of putting in a sign where a mere figure would suffice.

Unfortunately we have not the verbal courage of the Germans who coin their own terms for everything. What, for example, could be more expressive than "auspuffseite"? That is the one German word for what we call the exhaust side of an engine. If we had such courage we might talk of head resistance simply as "facepush," and the weight lifting capacity as "uptake"; a good Scottish word in another sense. Figure to yourselves a scientific debate in which our leading scientists argued hotly on the "uptake and facepush ratio" of certain aerofoil curves. It could be done in Germany, but not in this country.

The word "plane" itself is a distortion of meaning. It ought to mean a flat surface of two dimensions, it commonly means a three dimensional body containing as many curves as an ingenious designer and several well-intentioned carpenters, fitters, fabric fixers, and dope painters can put into it. In many cases it is used to include the whole machine which our national genius for terminological inexactitudes has led us into calling an aeroplane. As I have noted, the casual pilot calls the machine a "bus," and I have heard it called worse things. "Aero," which Mr. O'Gorman suggested as an abbreviation for aeroplane, is useful as a prefix, for instance in aero-show, aero-engine, and so forth, but it is no more likely to catch on in this country than is "auto" instead of motor-car. It sounds too much like a cheap Americanism. "Plane," "bus," "machine," "tank," "bundle o' sticks," "clothes-horse," and even "death-trap," have all been used at one time or another, but "aeroplane" is likely to remain the generic term for heavier-than-air craft.

When it comes to flying over water we are in even more parlous state. What are we going to call our machines? "Water-planes," "water-fliers," "hydro-aeroplanes," "hydroplanes," "amphi-planes," "hydros," "bat-boats," "air boats" "water-busses," "flying-boats," or what? And are we going to "land on the water," or simply to "water," as we "land" at present? Is the starting and alighting area to be an "aerodrome," or an "aquadrome," or a "watering-place," or an "aquaerium," or a "mareaerodrome," or one of half a dozen other verbal atrocities?

I wish the Aeronautical Society joy of their task as curators of the Anglo-aerial language. Personally I give it up as a hopeless job. And anyhow aerodrome fashions will probably settle these points long before any scientific body begins to consider them. When that has been done our leading scientists will, as usual, come along and prove with bell, book, and candle, x, y, and z, slide rule and logarithm how it ought to be—just in the same way as they have taught us how to build and fly aeroplanes.—C. G. G.

Concerning Official Methods.

It will be remembered that last week reference was made to two monoplanes ordered from a British firm by the Australian Government. After having rushed forward the construction of these machines, the makers, who are in fact the British Deperdussin Co., were ordered after a delay of three weeks to send them to Farnborough for inspection.

Later developments of the affair are even more surprising. The writer one day last week paid an uninvited visit to Farnborough Common. In passing the Royal Aircraft Factory he saw one of these little school Deperdussins standing in the open doorway of a shed which contained also two B.E.'s, apparently of Bristol make, a Maurice Farman and a Flanders monoplane. In spite of the dampness of the atmosphere recently, apparently none of the engines had been covered up except that of the Deperdussin, the cylinders of which were still wrapped in their original packing. In this machine the wings and control planes had not been fitted as it had only been delivered a day or two previously. So far as one could see from the outside there were no heating arrangements in the shed, which was, therefore, hardly suitable for storing aeroplanes in all sorts of weather.

At the other end of the Royal Aircraft Factory's enclosure is the huge canvas dirigible shed. This was open at both ends, and being a dry day a healthy sand storm was sweeping through it at intervals. Right in the middle of this shed stood the other unfortunate Deperdussin with its rudder post and tail fin smashed, and it appeared as if the machine had, as might have been expected, been blown over during the night and damaged. Also the machine was naturally smothered in dust, and it is said that the wet of the following day partially filled it with water.

If this is a fair sample of the treatment to which machines sent to the Royal Aircraft Factory for inspection are subjected, it says very little for the common sense of those in charge of this department, and it appears to be only another of those unfortunate occurrences which lead to the possibly erroneous conclusion that the staff of the Royal Aircraft Factory deliberately do all they can to make the work of independent constructors appear as bad as possible.

Further, one gathers that the War Office, on the recommendation of the Royal Aircraft Factory, now insists on these two little school machines doing an hour's test flight at Farnborough. Now Farnborough Common and Laffan's Plain are at all times the most unfair places possible on which to test light and low-powered school machines. There is no doubt about the machines being able to fly for an hour, all being well, but a small piece of grit in the petrol, or any of the little things which make even the most reliable motor cars stop unexpectedly, may force the unfortunate pilot to land anywhere except on the tiny patch of good ground where a safe landing is possible, with the result of smashing the whole machine up and causing the makers more delay, trouble and expense. There is no reason whatever why the test flight should not have been done at Hendon, where the machines would have approximately the same landing conditions as they will have at the Australian Government's school, for one may rest assured that Mr. Henry Petre, who is in charge in Australia, will have more sense than to send his school machines out over rough country.



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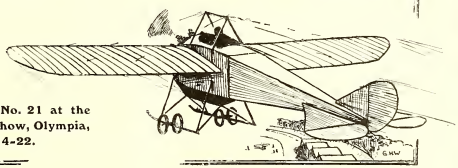
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—to fast Monoplanes

The Official View.

BY W. E. de B. WHITTAKER.

Aviation has been with us in a practical sense for so short a time that though its high military value has been recognised, the various Service manuals have so far been devoid of any reasoned reference to the new aid to reconnaissance. The general system of strategy and tactics approved in the British Army is laid down briefly and concisely in a small two volume book entitled "Field Service Regulations," issued by the General Staff and revised from time to time. The new edition of this book has been issued some few weeks, and contains for the first time a section devoted to aeronautics and its influence on military operations.

Six pages in the section headed "Information" are allotted to the official view of the new arm. Some time ago in this paper one outlined the relations of cavalry and the air service, and it was pointed out that the aeroplane did not supersede cavalry but merely aided it. This view apparently was one held by many soldiers at the time, though naturally civilian aviators and agitators were not in agreement. That one was not inaccurate is shown by the following paragraph from the section on "Strategical Reconnaisance":—

". . . . An efficient air service working in co-operation with the independent cavalry will be able to contribute much towards the success of a strategical reconnaissance even in face of a superior force of hostile cavalry, but in fog, wind or darkness the air service can accomplish little or nothing, and it must be regarded as supplementing, and not as a substitute for, strategical reconnaissance by the independent cavalry."

And on this principle the whole section proceeds. There are few things more dangerous than to over-estimate the value of any unit in a field force. Under-estimation causes infinitely less trouble. Unfortunately the very newness in practice of the idea of aviation has given it momentarily far too high a value in the mind of the thinking public, and that the official statement should be guarded and tentative is admirable.

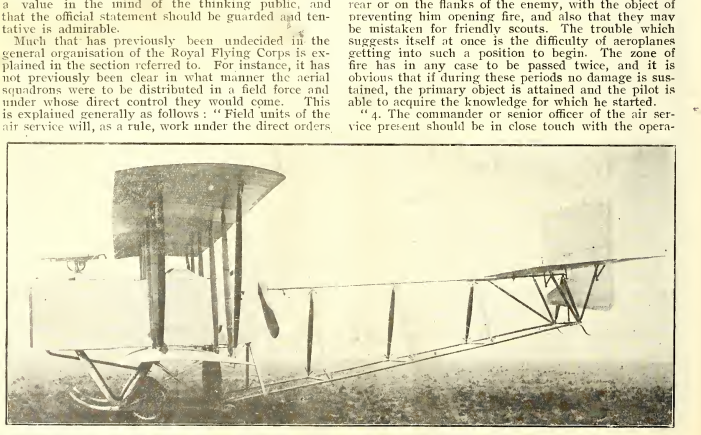
Much that has previously been undecided in the general organisation of the Royal Flying Corps is explained in the section referred to. For instance, it has not previously been clear in what manner the aerial squadrons were to be distributed in a field force and under whose direct control they would come. This is explained generally as follows: "Field units of the air service will, as a rule, work under the direct orders of the general headquarters' as Army troops, but aircraft may be detached to Army or other headquarters as required, the principle being observed that the air service shall be so distributed that the units may be placed in the best positions, not only to obtain information, but to co-operate with the other arms, and especially with the cavalry in this all-important service."

From this it is clear that there is no present intention of making any organised use of aeroplanes for the purpose of range-finding in connection with artillery. No skilled aviator will perform the graceful figures of a minuet in the blue sky that scientific gunners may distribute death with accuracy. One notices also that there is no reference whatsoever to bomb dropping from aeroplanes, airships, or kites. This omission furnishes another proof that wisdom still flourishes in high places. Except that those who write for the public prints rarely read books of value or understand the rudiments of the things they discuss, one would expect this exclusion of a peculiarly entrancing horror to annoy their souls. But doubtless they will continue to discuss the ethics of bomb dropping and the manner in which soldier aviators will shell the enemy's position, until the end of all things.

A point that is frequently forgotten is emphasised in the paragraph headed: "(b) method of obtaining information." The great difficulty confronting those who desire to destroy opposition aircraft is that shells fired vertically upwards must, so soon as their energy is spent, land somewhere. Great care must therefore be taken that this somewhere is not within one's own lines. The lanes of annoyance converging on those commanders who have to deal with aircraft are countless in number and of unbelievable complication in form.

Officer-aviators are advised to reconnoitre from the rear or on the flanks of the enemy, with the object of preventing him opening fire, and also that they may be mistaken for friendly scouts. The trouble which suggests itself at once is the difficulty of aeroplanes getting into such a position to begin. The zone of fire has in any case to be passed twice, and it is obvious that if during these periods no damage is sustained, the primary object is attained and the pilot is able to acquire the knowledge for which he started.

"4. The commander or senior officer of the air service present should be in close touch with the opera-



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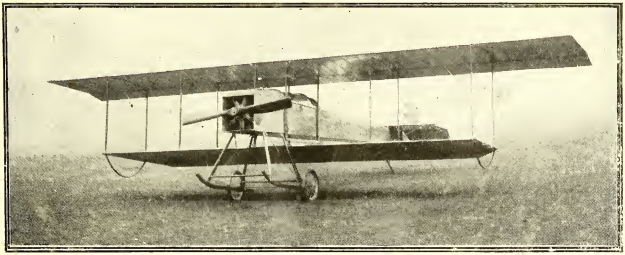
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tions section of the general staff, through which he should receive his orders and to which he should act as adviser on all technical matters, e.g., as to the class of aircraft to be employed on each service, and as to how far weather conditions are favourable to flight, how many aircraft should be despatched, etc."

The officer commanding the air service and the officers employed as observers are also supposed when not flying to be constantly at general headquarters so that they may be constantly in touch. Motor-cars are to be placed "at their service to take them to their vessels as required." This does not strike one as the best method of conveyance possible. Motor-cars in broken country are almost as useless as celluloid fire-grates. Why should not the horse, the historic transport animal, be employed for this purpose? Is it because there is a doubt as to flying officers' knowledge of equitation? It seems a little unnecessary for all the observers to be at general headquarters, which is already congested enough. These officers could quite well remain with their units and be instructed by written message or verbally by the officer commanding the air service.

It is apparently hoped that reconnaissances will be made in the majority of cases at an altitude of 5-6,000 feet, as, it is pointed out, this gives a radius of four to six miles for effective observation. No doubt experiments have been made in observing troops from this height, but for my own part I think little can be done at any height in excess of 3,000 feet. Troops are not easy to see even when flying at low altitudes, as many a French military aviator has discovered. It is explained that in unfavourable weather aircraft must descend to a lower altitude "for purpose of obtaining information." For some time to come one does not imagine that aircraft will be exposed to any serious danger from gun fire so long as they fly at an altitude in excess of 2,500 feet. There are difficulties on both sides, but the gunners' problems are the more serious. So soon as he has settled the initial question of range-finding he has the unpleasing knowledge that as every shell must ultimately return to the earth that gave it birth, before opening fire he must take an intelligent interest in backgrounds. All these problems can be solved with delightful ease in the editor's room, but the grim reality is worlds away.

(To be continued.)

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," of January 28th:—

Special Reserve of Officers, Royal Flying Corps (Military Wing).—Christopher William Wilson to be Second Lieutenant (on probation). Dated January 29th, 1913.

The following appointment was announced by the Admiralty on the 24th ult.:—

Lieut. C. L. Courtney, to the "Actaeon," additional as flying Officer to date January 7th.

FRANCE.

On January 27th, at Buc, two Maurice Farman biplanes passed the necessary acceptance tests for the army. A military commission took delivery of the machines.

The municipality of Soissons has decided to construct hangars and lay out a landing ground in the vicinity of the town. The land will be purchased with the money made in recent fêtes (£600 in all). The Comité National d'Aviation will erect the hangars.

The new military ground at Pau is now ready for use, and the aeroplanes attached to the centre are housed in the new hangars. There are fifteen machines in all, two of them two-seaters and one a "taxi-pingouin," all of Blériot manufacture. The officer commanding is Capt. Aviator Casse, with Lieut. Aviators Brulé and Cazes as subalterns. Three officers and five N.C.O.s are under instruction. Lieut. Cazes is at present making extended experiments in bomb dropping. His three types of projectiles weigh respectively 875 gr., 1 kilo 211 gr., and 2 kilo. The target is composed of three concentric rings painted on the ground of 75, 150, and 300 metres radius.

The Nancy centre is now in full swing with five officer aviators attached for service .

Sapper Aviator Irat of the Chalons centre left Villacoublay on a Henry Farman biplane at 11 o'clock on January 27th and flew in a thick fog to Auxerre by way of Etampes, Montargis and Pithivier. He landed at two o'clock in the afternoon after a most difficult flight. On the following day he left Auxerre at 11 o'clock and flew to Mourmelon, a distance of 200 kilometres, landing at 2 o'clock.

M. René Simon, who has distinguished himself in two continents as aviator, is now attached for one year to the 2nd Aeronautic Group at Reims as "Sous Lieutenant Aviateur." He is at present practising at the Deperdussin school at Reims.

The aviation centre of Aver, the formation of which only took place a few months ago is now in active working order. All the machines in use are Blériot monoplanes, the commanding officer being Capt. Bellenger, whose knowledge of Blériots is unrivalled. Lieut. Aviators Kreyder and Munch and Sapper Aviator Andre Blaignan, all on the staff of the school, have taken their military brevets during the last fortnight. Five new pupils have arrived.

Naval Lieut. Aviator Cayla, in giving an account of his experiences while piloting a hydro-aeroplane, stated recently that he was unable to discover a submarine from above. In reply, M. Chemet, the pilot, has written the following letter to "L'Aero.": "I have just delivered a number of hydro-aeroplanes in Italy, and among the tests imposed was one to discover whether the pilot or observer could distinguish a submarine under the water from a certain height. The hydro-aeroplane Borel which I piloted gave the observer a clear vertical view, and he could see the submarine quite clearly. I myself was looking out for it, and almost every time I saw the dark mass. I think that from a height of 1,300 ft., at which altitude I was flying, one can see to a sufficient depth in calm water. The principle to be followed is to give the observer an uninterrupted field of vision, vertically downward; an oblique vision places the object too far away and also causes the optical rays to be refracted." This letter is interesting in view of certain recent experiments off the English coast near Eastbourne and in the Forth.

M. Cadiot, President of the Budget Commission, and M. Clementel, Reporter of the War Budget, are conducting an inquiry into the present state of personnel and materiél in the aeronautical service. Unpleasant disclosures are expected.

Adjutant en Chef Faure qualified for his aviator's certificate at Buc on January 30th, after five lessons on a Maurice Farman biplane.

On January 24th Lieut. Aviator Reimbert, with Lieut. Jaba as passenger, Quartermaster Aviator Benoit, with Capt. de Lalève-Laprade and Quartermaster Aviator Sturard with Cpl. Dewoitiné, all on H. Farman biplanes (80-h.p. Gnome engines), left Biskra for Ouled Djellel.

Four Hanriot monoplanes have been purchased for the Army by the National Subscription. They are to be named "Le Vetéran," "Le Drapeau," "Le Ventose," and "Le Jeanne d'Arc III."

The Sapper Aviator Foulquier left Reims on January 31st for Toul on an 80-h.p. Gnome-engined Henry Farman biplane, and arrived after a three hours' flight.—W.

GERMANY.

The Ministry of War has under consideration the construction of a series of subterranean hangars for the new military dirigibles. They will be built in such manner as to conceal them from opposition aerial scouts.

The Ministry of Marine intends to form a new aerodrome at Wiemar on the Baltic.

The Zeppelin dirigible L.1 (Naval) stationed at Johannisthal leave for Hamburg on April 1. It will be replaced by the L.11, which will be completed on March 15.



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The Zeppelin dirigible Z.L.5 has now passed its duration tests, remaining in the air from 6 o'clock one day until 10.30 a.m. on the next. The flight was carried out in the vicinity of Baden. The last Zeppelin delivered remained in the air for twenty-eight hours on its test flight.

It is announced that the Schütte-Lanz firm have sold their patent rights to the Ministry of War.

The "Observer's" German correspondent writes:

"In connection with the Emperor's birthday, the military aviators have been signalled out for special honours. The many-gifted monarch has designed an artistic badge for those of his officers who have gained their pilot's certificate and excelled in flying. It is a silver medal, in the centre of which is engraved an aeroplane surmounted by the Imperial crown and initials. His Majesty has, moreover, conferred upon eight officers who have executed successful cross-country flights the Order of the Crown, Fourth Class.

"This additional proof of the favour shown to army aviators over civilians is causing renewed dissatisfaction among the latter. It has been proposed in all seriousness in a Berlin paper that part of the National Aviation Fund should be devoted to the alleviation of the lot of military flyers by paying their taxes and providing them with more creature comforts. The axiom that it is far easier to collect a fund together than to dispose of it suitably is being undoubtedly proved in the case of the German National Aviation Fund."

The Ministry of Marine is considering the desirability of holding a hydro-aeroplane meeting at Putzig. That which was held last year was not given adequate support by German manufacturers.

On February 1 the new law concerning military aeronautics came into force. It forbids aviators and aeronauts to pass over fortified places, magazines, petrol depôts, gas works, over princely castles or private gardens, over bathers at the seaside, or over crowds at any place.

A new hydro-aeroplane aerodrome is to be opened at Rostock in Mecklenburg. This place is on Breitling Bay, which is connected with the Baltic by a canal.—W.

AUSTRIA.

The military authorities have under consideration the erection of a number of dirigible sheds, and after careful examination of various types have practically decided to build hangars of the partly subterranean form.

It is stated on excellent authority that the entire force of military aviators has been ordered to the southern frontier.—W.

ITALY.

A Maurice Farman biplane, specially designed for transport purposes, was taken through its tests by Fourny at Buc on January 27th. With a load of 797 lbs. a flight of an hour and a half was made at a height of 1,000 feet. This machine has been constructed to the order of the Italian Army. Landings were made in ploughed fields and amongst thick herbage. No difficulty was experienced in either landing or rising.

A Donnet-Lévêque hydro-biplane was taken through the requisite tests at Bezons on January 28th by M. Beaumont, and was later accepted by the Italian Army.

A new military aviation school is to be opened at Bologna. The necessary sheds are to be erected on the Place d'Armes.

A single-seated Paulhan-Curtiss hydro-biplane is to be placed on board the cruiser "Roma," under the charge of Commander Aviator Scelsi, and another is to be on board the "San Marco," under Commander Aviator Filippi.

At Venice on January 30 M. Chemet put a Borel hydro-monoplane through all the tests for the Italian Navy.—W.

RUSSIA.

The Sevastopol hydro-aeroplane station of the navy has in its possession six Curtiss hydro-biplanes and one Voisin (Canard type). Another Voisin of the same type was recently destroyed in a head dive which carried it below the water of the bay. The mechanic was drowned, but the pilot, Sub-Lieutenant Cachinsky, escaped without injury.

Foreign aviators are forbidden to fly over the western frontier between January 14 and July 14, 1913. Any refusal to descend on the part of aviators breaking this rule will subject them to rifle fire, and in extreme cases gun fire.—W.

SERVIA.

The two French pilots engaged by the Servian military authorities Emile Védrines and Raoul de Reals have both returned to Paris. They say that Servia decided some time ago to install a military aerodrome at Nisch, a town in the centre of the country. Within a few days of the decision several sheds were erected and practice was in full progress. Though mountainous, Servia has many districts over which flying in its modern stage is possible. The school opened with twenty officer-pupils. The machines in use are three H. Farman biplanes (80-h.p. Gnome engines), three Blériot monoplanes (80-h.p. Gnome engines), two Deperdussin monoplanes (80-h.p. Gnome engines), two Russian-built Farman biplanes, and one Nieuport monoplane given by Russia. All these machines are in good condition. M. Jules Védrines has not been in Servia, despite the daily papers.

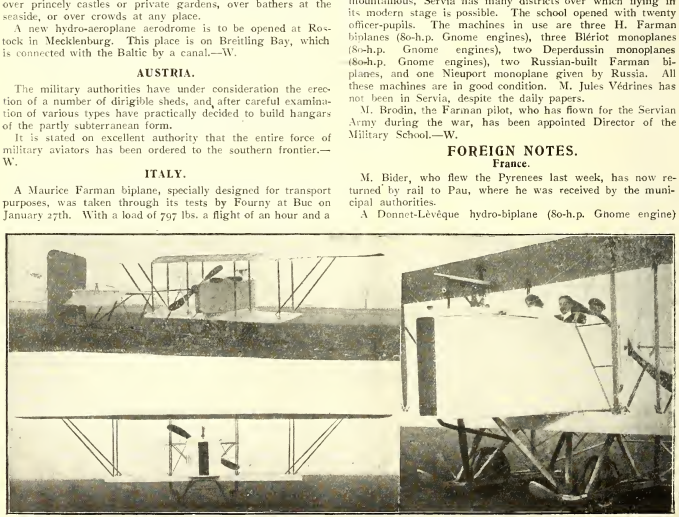
M. Brodin, the Farman pilot, who has flown for the Servian Army during the war, has been appointed Director of the Military School.—W.

FOREIGN NOTES.

France.

M. Bider, who flew the Pyrenees last week, has now returned by rail to Pau, where he was received by the municipal authorities.

A Donnet-Lévêque hydro-biplane (80-h.p. Gnome engine)



The Grahame-White military biplane from three points of view.



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built to the order of Baron Cederström was put through its tests on January 30 by M. Beaumont at Bezons.

M. Roland Garros has received the £400 prize given annually by the Academy of Sports for the best performance during the year. M. Garros' flight during the Circuit d'Anjou is thus considered the finest thing in sport during the year.

M. Bobba, who recently suffered a serious accident at Juvisy, is now flying a monoplane of his own design fitted with a 50-h.p. Gnome engine, at Casala in Italy. He made several excellent flights on January 28.

M. Laurens, flying a 50-h.p. Gnome-engined Deperdussin hydro-monoplane off Villefranche on January 29, passed over the French Mediterranean squadron, several times alighting on the water near the cruiser "Carnot," and rising again with ease. He was accompanied by a passenger.

The Federation Internationale Aeronautique is at present considering a proposal to institute a separate brevet for hydro-aeroplane pilots. It is considered that while an ordinary pilot is capable of managing a hydro-aeroplane as well, one who has only had experience of the latter machines ought to be allowed to fly an ordinary aeroplane without obtaining the aerial brevet.

M. Laurens, flying a Deperdussin hydro-monoplane, passed over the Battle of Flowers at Nice several times, his lady passenger showering roses on the crowd.—W.

Germany.

It appears from recent statistics that Germany has had 165 aviators possessing certificates granted under F.A.I. rules. Of these 21 are dead, and 44 have retired from aviation. Military aviators naturally do not appear in this list.

The list of prizewinners in the recent German aviation motor competition has just been issued and is as follows:—The Emperor's prize of 50,000 marks has gone to the Benz Company, Mannheim; 2nd prize, 30,000 marks (Chancellor's prize) to the Daimler Company, Canstatt, 3rd prize, 25,000 marks (Ministry of War prize) to the Neue Automobil Gesellschaft; 4th prize, 10,000 marks (Ministry of Marine prize) to the Argus company, and the 5th prize (Ministry of Interior prize) to the Daimler company.

Herr Palz, the German aviator, side-slipped from a height of forty feet whilst flying over the Braenderheide aerodrome near Aix la Chapelle and was killed instantly.

During the year 1912 it appears that Germany has imported eighteen dirigibles and aeroplanes of a total value of 292,000 marks and has exported 25 dirigibles and aeroplanes of a total value of 918,000 marks.

Russia.

A firm of aeroplane manufacturers in Russia are building an aeroplane fitted with four motors of 500 h.p. in all. It is intended to carry fourteen passengers.

Italy.

Signor Mario Arioli, of Milan and Cardiff, wrote on Tuesday, 28th:—"Bielovucic was offered 10,000 francs to continue his flight to Milan but refused. During his short visit in Milan he was greatly feted by the public and more than 25,000 people went to meet him at the station. The "Gazzetta dello Sport" gave him a beautiful gold medal, as did the Touring Club of Italy. At the reception given by the "Gazzetta dello Sport" were present all the military and civil authorities of Milan.

"On Sunday last the aviator Attilio Maffei made a fine flight on his 50-h.p. Blériot. He started from Lugano and came without stop to Milan in 52 minutes, about 120 kilm. (72 miles. He started to return on Wednesday, but over Como lost his way owing to the fog and landed safely at Secco.

"I went yesterday to the military grounds at La Malpensa and saw some very good flying on military Nieuports; also Pizey gave some skilful exhibitions on the 80-h.p. Bristol. There is now started the Bristol School with the following pupils:—Capt. Capuzzo, Lieut. De Riso Gallot and Ercole.

"Garros intends coming soon to Italy to beat his own altitude record.

"At La Malpensa I have shown the Warren safety helmet, which was greatly admired by everyone, and I may say that they gave me the hope that the Government will soon purchase a number of these helmets."

Brazil.

Eduardo Chavez has opened an aviation school in Brazil. He has several Blériot monoplanes of various horse-power.

Concerning Caudron Developments.

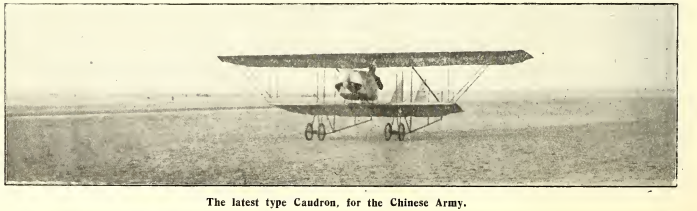
The accompanying photograph shows the latest Caudron biplane, which is one of a batch of twelve ordered for the Chinese Government. Some are fitted with 50-h.p. Gnomes, some with 70 h.p. and some with 80 h.p. Gnomes. The following are the dimensions of the machine shown:—Span, lower plane, 18 ft. 6 in.; top plane, 31ft. 3 in.; total length, 22 ft. 6 in.; single-seater fitted with 50-h.p. Gnome with tanks for 4½ hours' flight. Her speed is about 63 m.p.h., and she climbs 1,650 ft. in five minutes.

Mr. H. Ewen was at Rue and Crotov last week and found the works there going like a bee-hive. In addition to this Chinese order the Caudron Frères have just received a further order for 10 biplanes fitted with 80-h.p. Gnomes for the French Government, and a number of private orders.

Mr. Ewen was accompanied by an officer from the Admiralty, to whom on Saturday a thorough demonstration of the latest Caudron hydro-aeroplane was given. This machine is fitted with an 80-h.p. Gnome with the latest starting handle at the pilot's seat. She has the Caudron patent combined wheels and floats which are equally satisfactory on land and water. The inspecting officer first went with M. René Caudron for an extended trip, and afterwards watched the behaviour of the machine when Mr. Ewen went up with M. Caudron. The sea was about three miles out and a wind of 40 m.p.h. blowing. There was only a small swell in the bay, but out in the open there were decent waves rolling and plenty of "horses." Several times in each flight an "ammerissage" was made out in the open and the get-off was wonderfully quick and smooth. At the finish of each flight the hydro was landed close to the hangars and taken right in under its own power. A point worth noting is that all fittings on the hydro go through a special process so that the water has no effect on them whatever.

The Caudron machines for the Aero Show are the new monoplane fitted with 50-h.p. Gnome and one of the latest 35-h.p. single-seater biplanes. The biplane originally intended for the show was bought by Mr. Jones and is off to Australia, and already a purchaser is after the biplane which is being erected here for the show.

The works of W. H. Ewen, Ltd., in Scotland, start this week, and judging by the enquiries the firm are receiving they look like being full up with business in the near future.



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Questions in the House.

Written Answers. 28 January, 1913.

Committee Report on Monoplanes.

Mr. Joynson-Hicks asked the Secretary for War when he proposes to publish, for the information of Members, the report of the War Office Committee on Monoplanes.

Colonel Seely: I hope to be able to lay this report on the Table very shortly.

[The Report dated December 3rd was published on February 4th.]

Oral Answers. 29 January, 1913.

Royal Flying Corps (Naval Wing).

14. Mr. Joynson-Hicks asked whether the First Lord of the Admiralty has selected a number of sites round the coast for hydroplane stations; and whether he is contemplating any large extension of the Naval Wing of the Royal Flying Corps?

16. Mr. Fell asked if several stations and garages for aeroplanes and dirigibles are to be established on the East Coast of England to accommodate the aircraft which may be employed by the Admiralty in the North Sea?

Dr. Macnamara: The establishment of aircraft bases on the East and South Coasts, as well as the general development of the Naval Wing of the Royal Flying Corps, are both questions that are receiving the close attention that their importance demands.

Mr. Fell: Will another statement be made as to these stations?

Dr. Macnamara: I am afraid I cannot go beyond the answer I have given to-day.

Royal Flying Corps (Military Wing).

20. Mr. Joynson-Hicks asked the Secretary of State for War whether it has been decided that the majority of future orders to be given to independent aeroplane constructors shall be for machines to the B design; and, if so, whether, in fairness to the industry, he will take steps to announce this decision?

Colonel Seely: The reply is in the negative.

[Colonel Seely's reply does not make it quite clear whether the majority of future orders are to be for "B.E." machines; or whether there are to be any future orders; or whether it is merely a refusal to announce his decision. Further information would be acceptable.]

21. Mr. Joynson-Hicks asked the right hon. gentleman whether it is intended that any civilian aviator accepting a commission in the Reserve of the Royal Flying Corps can in no case be given a commission in that section of the Regular Forces comprised in the Military Wing; whether the nearest approach to permanent service is that he may volunteer for four years' continuous service with the Military Wing and remain during that period in the Reserve; and, if so, whether in view of the pledges given, he will explain why these civilian aviators are so treated?

Colonel Seely: An officer of the Special Reserve Royal Flying Corps can compete for a commission in the Regular Forces subject to the usual conditions. If he is not a candidate for the Regular Army, his term of service in the Royal Flying Corps is four years, subject to extension.

[If this reply means anything, it means that an officer of the Special Reserve of the Flying Corps can get into the Regulars in the same way as any officer of any battalion of Special Reserve (late Militia), but it does not answer the question put by Mr. Joynson-Hicks, which referred to the Reserve, and not the Special Reserve, which is quite another thing.]

22. Mr. Joynson-Hicks asked the Secretary of State for War whether the motor vehicles, said to be capable of transporting the squadrons of the Royal Flying Corps by road, are designed to transport aeroplanes or merely the personnel of the squadrons; and, if so, whether there are sufficient wagons to act as transport for more than a single squadron on a war footing?

Colonel Seely: The answer to the first part of the question is that the motor vehicles mentioned are designed to carry aeroplanes, equipment, and stores, as well as personnel. The reply to the second part of the question is in the affirmative. Arrangements have already been completed for transport for the Military Wing of the Royal Flying Corps on mobilisation.

Mr. Joynson-Hicks: Can the right hon. gentleman say how many of these motor transport vehicles are now ready?

Colonel Seely: I could not give the number without notice.

[So far as one can gather the motor vehicles mentioned are merely ordinary lorries with platforms on which aeroplanes maintain a precarious hold, what time the unfortunate Flight Commander hopes for the best.]

23. Mr. Joynson-Hicks asked the right hon. gentleman whether the fact that a number of different officers of the Royal Flying Corps habitually fly the same machine is due to the exercise of the discretion of the officer commanding the Military Wing and of the officers commanding squadrons, or whether it is due chiefly to the scarcity of machines; whether in time of war it would be necessary to have a number of aeroplanes for each officer's use instead of a number of officers for each aeroplane; and whether he has considered the advisability of establishing an aeroplane remount department?

Colonel Seely: I cannot at present add anything to previous answers on this subject.

[This answer somewhat reminds one of the reply given to one in one's childhood: "Those who don't ask don't want, and those who ask shan't have." It will be noticed that Colonel Seely calmly ignores the fact that these exceedingly pertinent questions are quite different from any others previously put to him.]

24. Mr. Joynson-Hicks asked whether, of the thirteen monoplanes classed as being in flying order, in spite of possible alterations which may be considered necessary, eleven of them, namely, six Deperdussins, four Flanders, and one Blériot, have ever been flown by Regular officers of the Royal Flying Corps, and, if so, how many of these have been so flown; whether, under these circumstances, there are at the moment more than fifteen aeroplanes, including monoplanes and biplanes belonging to the Military Wing of the Royal Flying Corps immediately available for use in time of war; and whether this number is adequate?

Colonel Seely: Of the thirteen monoplanes mentioned only three have not been flown by officers of the Royal Flying Corps, namely, two Howard Flanders and one Martin Handasyde. The reply to the second part of the question is in the affirmative.

[But for the unfortunate fact that the House is now adjourning for a well-deserved rest, it would be interesting to ask how it is that ten out of the thirteen monoplanes have been flown by officers of the Royal Flying Corps, in view of the fact that the flying of monoplanes has been prohibited, and that the majority of the thirteen have been delivered since that prohibition was issued.

As regards the second part of the question, it is quite possible that owing to certain quite recent deliveries of "B.E." type Bristols and new Maurice Farmans there may to-day be more than 15 aeroplanes available for use in time of war, provided that officers are compelled to fly the monoplanes which are officially considered dangerous, but it will be noticed that Colonel Seely wisely omits to reply to the question as to whether the number is adequate.

In fact it must have been noticed throughout the series of Mr. Joynson-Hicks' questions that the replies omitted are on the whole more important than the replies given, the satisfactory result being that one may assume that silence gives consent to the statements implied in the questions.]

The Royal Aero Club.

The following aviators' certificates were granted by the Committee at its meeting on January 21st, 1913:—306, Sub-Lieut. Arthur Wellesley Bigsworth, R.N.R. (Bristol biplane, Bristol School, Salisbury Plain); 405, Sub-Lieut. H. A. Littleton, R.N.V.R. (Bristol biplane, Bristol School, Salisbury Plain).

Edinburgh Aeronautical Society.

A general meeting of this society will be held at the Rutland Hotel on Friday, February 7th, at 8 p.m. Anyone interested is invited to attend.—G. T. Cooper.

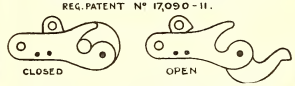
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With the Bulgarian Air Corps.

There recently arrived at the office of The Aeroplane one who is almost certainly the only person in this country who has ever flown in an aeroplane on active service. He had just returned from Bulgaria, or Turkey as it still is on the maps, where he had been having the time of his life with the Bulgarian aviators at Mustapha Pasha, and from there to Chatalja. He is full of admiration for the magnificent organisation of the Bulgarian Air Corps and says that although they only had about twenty machines at the beginning of the war, they had an excellent stock of spare parts, and several other machines arrived afterwards.

He describes the Bulgarian officer-aviators as splendid. They were only pupils when war broke out, but they have become remarkably fine fliers, and have shown themselves to be extremely plucky and very skilful. The officers acting as observers also seem to have no fear of anything, for they persuaded their pilots to go out in, as he put it, "any old kind of weather." He assures us that there is no "eye-opening" to be done so far as the Bulgarian army is concerned, for they have proved the absolute necessity of air scouts, and he says that on several occasions the General Staff entirely changed their dispositions solely on information gathered by their air scouts.

Apparently, newspaper information so far received about aviation in this war has been as inaccurate as possible, for our informant knew nothing of the alleged deaths of Popoff and Konstantin, nor had he ever heard of pilots of those names flying. The only death of which he knew was that of Alexieff. This officer had been flying over Adrianople and had the elevator of his Blériot pierced by bullets. On returning he changed it for another, which he adjusted badly, so that when he went up for a test flight he could not get the machine down again. To do so he switched off and fell about 50 ft. On striking the ground the machine caught fire and Alexieff was burnt, though the fall itself did not appear bad enough to kill him.

Naturally one is interested to hear of the doings of Messrs. Sabelli and Snowdon Hedley, the former being the ex-Deperdussin pilot and the latter one of Mr. Sopwith's pupils. Sabelli has, as readers know, been flying regularly over Adrianople, but the latest news is that not long before the Armistice was signed he took up a Bulgarian officer on a tandem Blériot and his passenger successfully blew in the roof of a mosque with a bomb. The news was confirmed by a Turkish soldier who escaped from the city.

Mr. Hedley, who has been flying a German Albatros biplane with a 100-h.p. Argus engine, was sent south with the army and operated at Chatalja with several other pilots, these being the French pilot Burri on a 75-h.p. Renault-Sommer, the Bulgarian Petroff with a 50-h.p. Blériot, and two Russians, Exikoff and Kolchin, who were flying Russian copies of the Henry Farman. These last machines are described as very good and fast fliers, but the galvanised iron bracing wires did not inspire confidence. The Albatros flown by Mr. Hedley was also of Farman type, but with a sharp dihedral to the outer sections of the lower plane, and the engine, which had cast-iron water jackets, was so heavy that the machine was really under-power. The pilots had to be their own mechanics, but otherwise they were excellently treated, and one gathers that the Bulgarians of all ranks were kindness itself to the aviators.

During the operations at Chatalja the pilots made daily trips from the Sea of Marmora to the Black Sea right over the Turkish lines, scouting, dropping bombs, and generally making themselves unpleasant.

As soon as the Armistice was signed the pilots, who had not changed their clothes for about six weeks, flew to Rodosto, on the Sea of Marmora, for their first wash, and, peculiarly enough, both the Russian aviators smashed their machines on landing there, although they had gone through the campaign without serious damage.

Afterwards they returned to their headquarters at Chorlu, and one gathers that all the pilots who had machines have been doing a considerable amount of flying purely for the fun of the thing, and also because aerial transit is so much quicker. For instance, Mr. Hedley flew from Chorlu to Mustapha Pasha in two hours, and on another occasion to Kirk Kilisse in an hour and a half. Either of these journeys would take days by road and a good many hours by troop train, if one had the luck to catch one.

Evidently the Bulgarians are to be congratulated on the excellent way in which their Air Corps was organised at short notice, and it is satisfactory to know that at any rate one British pilot has had a hand in their successes. Mr. Hedley's experience should certainly be valuable when he returns to England after the war is over.

The Ferguson Monoplane at Work.

Mr. Harry Ferguson, of Belfast, has now got his monoplane at work again. Mr. Lywood, of the Norfolk Regiment, has been assisting in the experiments, of which Mr. Ferguson writes as follows:—"Saturday mid-day looked a decent day, so Mr. Lywood and I started off for Magilligan, about 80 miles from here; we arrived there at night and found that the recent gales had somewhat broken up the fuselage. We had a car with electric head lamps, so we turned the front of the car towards the machine and started in and made the chassis right. We built up the wings, and about 11 p.m. had the machine ready for flight. It is now four months since the engine went round at all, and it has been lying out during all those four months with only an old tarpaulin over it. Mr. Lywood reckoned it would take us about a day to get the engine turning. I took a squirt can and squirted some



Mr. Lywood flying the Ferguson monoplane. In the group, reading right to left, are Messrs. Ferguson, Lywood, Harcup and the mechanic in charge.

petrol into the cylinders, put the switch off and gave the engine exactly two revolutions, put it on again and gave it one swing, and it went off with its usual old roar.

"The following morning, when the tide had gone out, Mr. Lywood took a few runs over the sand, then he got off with the throttle just slightly open and made a flight in a 15 m.p.h. wind for a quarter of a mile at from 5 ft. to 10 ft. high. After that he made some very fine flights in far higher winds and altogether was delighted with the machine. One time during the day it was blowing quite half a gale and he went up to about 50 ft., the machine flying as steady as a rock right past us. When he was passing us he was not doing more than 20 miles per hour, and the machine was rising and falling with the gusts on a perfectly level keel. I was not a bit happy to see him 50 ft. high in that wind because the wires are rusted, but all the same nothing gave the slightest trouble.

"He is very keen on having the machine rewired and the wings recovered; and taking it up to a really good height and doing some flying with it."

This was the first time Mr. Lywood had flown a monoplane, having taken his ticket on a boxkite. Mr. Lywood himself said that the machine could not have been easier to manage. The circumstances were not at all favourable. The wind was blowing between 20 and 30 m.p.h., and the canvas and wires were in a bad state, having been exposed to the weather for over two years.

After two or three rolls he took her into the air and continued flying straight at about 40 ft., with "vol plané" landings, for the rest of the afternoon. Owing to the state of the wind and condition of the wing-stays he did not deem it advisable to do any turns. He stated that the machine climbed very well in spite of the fact that the engine is only rated at 25 h.p., though he admitted that Mr. Ferguson has increased the horse-power to about 40. Mr. Lywood cannot speak too highly of the design and construction of the machine, and certainly the pluck and perseverance of Mr. Ferguson is worthy of the highest praise, for he has been confronted with very many difficulties which it is impossible to enumerate.

Waking Up England in Switzerland.

Mr. Louis Noël, who took Mr. Grahame-White's big Farman out to St. Moritz, wrote on January 28th as follows:—"We began to fly to-day. At first Mr. G.-W. took the lever. He rose steadily 2,000 ft. and came down with a fine 'vol plané.' After I took up Carr as passenger. I never saw in my life so glorious panorama. One side you shave the mountains and on the other side you find 1,000-1,500 feet high. I can't find words to express my personal feelings, but what I can say is that Mr. G.-W. had a splendid idea to come here with the 70. We could not fly any more—motor trouble—but hope to-morrow we shall have some capital flying."

On the 29th, however, Mr. Noël wrote that the bad petrol obtained there caused more motor trouble. After a couple of straights with Mr. Carr as passenger, Mr. Noël went up alone. At 80 to 100 feet the engine stopped as the machine was climbing, and a gust hitting her at the same time she "stalled" and side-slipped before he could get the nose down for a glide. Fortunately she landed wing first in three feet of soft snow, so that she only broke one extension and a couple of struts, which can be repaired in a few days. Mr. Noël happily escaped unhurt, and his many friends will rejoice at his good fortune, for any accident to him would be universally regretted.

Mr. Grahame-White is undoubtedly doing good work, for he is showing numerous well-to-do English people who delight in spending their money abroad that this country is not behind in the new sport.

An Encouraging Expansion.

The Aircraft Manufacturing Co., Ltd., desire it to be noted that they moved into larger offices on the first of this month, and that their address is now 47, Victoria Street, Westminster, S.W., instead of St. Stephen's House, Westminster. The fact that larger offices are necessary is satisfactory evidence of the increasing business done by the firm, and may be taken to indicate that the good service done by the Henry and Maurice Farman machines delivered to the Navy and Army assures further orders in reasonable quantities. The firm's success is thoroughly deserved, and Messrs. Holt Thomas and Greswell are to be congratulated thereon.

The Aero Show Trophy.

Regular racing is to start at Hendon again on February 22nd, when the Grahame-White people are, in their usual sporting way, putting up for competition a very respectable prize to be known as "The Aero-Show Trophy." Messrs. Hamel, Hucks, Desoutter, Gates, Verrier, Manton, Turner and Pickles are fairly certain starters, and one gathers that several other well-known pilots are likely to compete. The Aero Show at Olympia opens on February 14th, and this race meeting takes place on the last day of the show, so people who have taken sufficient interest in aviation to inspect the machines at the show will have a good opportunity of seeing how similar machines behave in the air.

Exhibitions at Hendon.

Messrs. Desoutter and Manton were up as usual in the 50-h.p. Blériot and the Grahame-White biplane respectively. M. Verrier took out the new Maurice Farman for a few exciting circuits, but the wind was too unreliable for anything very spectacular. On Saturday and Sunday the weather was quite impossible for flying.

A Promising Amalgamation.

It is interesting to hear that the Frank Hucks Waterplane Co. and the Eastbourne Aviation Co. have amalgamated, and that the two concerns will carry on business as The Eastbourne Aviation Co., Ltd. They are shortly putting up four sheds on the beach at Eastbourne, and the three Farman machines belonging to the late Frank Hucks Waterplane Co. will be taken along as soon as they are finished. It is the firm's intention to open a hydro-aeroplane school, and to give exhibition and passenger flights along the South Coast. Mr. Frank Hucks will hold the position of manager and secretary, with Mr. F. B. Fowler, of Eastbourne, as managing director. The firm are expending a goodly sum on new plant, and intend to go in for construction.

Mr. Hammond has now left the firm, and Mr. Fowler is giving both biplane and monoplane instruction. Mr. Gassler will probably be one of the pilot instructors to the new company, together with Mr. Fowler. At the present moment they have the following machines:—One 28-h.p. Anzani Blériot, one 35-h.p. Anzani Blériot, one 50-h.p. Gnome Blériot, one British biplane, and one Sommer biplane.

The new combination should turn out well, for both the principals are of the right type to make the concern a live and efficient business concern.

The Handley Page Monoplane.

After a period of inaction since December last, one of the 50-h.p. Handley Page machines was again flying this week at Hendon, piloted by Mr. Sydney Pickles, who has now joined the firm. The first flight was made on Saturday at 11.45 a.m. This was Mr. Pickles' first outing on the machine. After a straight flight from No. 1 to No. 4 pylon, Mr. Pickles was so impressed with the way it flew that he immediately did four or five circuits and several figures of eight.

The next day flying commenced at 8.20 a.m. with a cross-country flight to Edgware and back, and then a passenger flight for twenty minutes in the direction of Cricklewood. Two other passengers were taken up for trips, one for fifteen minutes and the other for eight.

After breakfast Mr. Meredith, the firm's works manager, started as passenger with Mr. Pickles to Barking, the anemobiagraph registering a wind of about 20 miles per hour. Higher up, however, the wind was very much stronger, and after flying for thirty minutes they only reached Sudbury; they therefore returned, arriving at the grounds six minutes later.

Altogether, the week-end flying was a very nice piece of cross-country work, the machine, which was the one "deteriorated" by Mr. Desmond Arthur, flying very much better after being overhauled.

Another Chauviere Success.

The series of M. Chauviere's successes continues to grow. Legagneux, when beating the world's record for altitude with a passenger on the 22nd—the occasion on which Miss Trehawke-Davies accompanied him—used an Integral propeller, as has been his custom in so many other of his fine performances.

The Monoplane Report.

There has just been published officially under the title "Report of the Departmental Committee on the Accidents to Monoplanes 1912," an account in some detail of the findings of this committee. Manufacturers have waited in some uneasiness for the verdict of the inquiry, and it is perhaps as well to state at once that the monoplane type is not condemned, and that such recommendations as are made are capable of easy fulfilment. The greater part of the report deals with engines and their fittings.

Three accidents are discussed, that at Graveley to Captain Hamilton (Deperdussin monoplane); that at Wolvercote to Lieutenant Hotchkiss (Bristol monoplane), and that to a Nieuport flown by Major Gerrard. The two former were both fatal in their results, and the official findings are practically the same as those of the Accidents Committee of the Royal Aero Club. The third accident has not previously been dealt with, and I, therefore, quote the brief desoription given in the report. The "machine was a Nieuport monoplane, fitted with a 50-h.p. Gnome engine. The accident in this instance resulted in no serious damage save to the engine. When at a height of about 1,000 feet a loud noise of breakage was heard from the engine. The flier at once switched off and planed down, first at a small gliding angle, which was increased of necessity later. In the opinion of the Committee he owed his life to his prompt action and sound judgment."

Various points in the design of the Gnome engine are taken in detail, and some deductions drawn. Unfortunately owing to the "Report" appearing on the day this paper goes to press, it is impossible to deal with its contents in an adequate manner, and I, therefore, merely give the recommendations of the Committee in full :—

(i) The accidents to monoplanes specially investigated were not due to causes dependent on the class of machine to which they occurred, nor to conditions singular to the monoplane as such.

(ii) After consideration of general questions affecting the relative security of monoplanes and biplanes, the Committee have found no reason to recommend the prohibition of the use of monoplanes, provided that certain precautions are taken, some of which are applicable to both classes of aeroplane.

(iii) The wings of aeroplanes can, and should, be so designed as to have sufficient strength to resist drift without external bracing.

(iv) The main wires should not be brought to parts of the machine always liable to be severely strained on landing.

(v) Main wires and warping wires should be so secured as to minimise the risk of damage in getting off the ground, and should be protected from accidental injury.

(vi) Main wires and their attachments should be duplicated. The use of a tautness indicator, to avoid over-straining the wires in "tuning up" is recommended. Quick-release devices should be carefully considered and tested before their use is permitted.

(vii) In view of the grave consequences which may follow fracture of any part of the engine, especially in the case of a rotating engine, means should be taken to secure that a slight damage to the engine will not wreck the machine. Structural parts, the breakage of which may involve total collapse of the aeroplane, should, so far as possible, be kept clear of the engine.

(viii) The fabric, more especially in highly loaded machines, should be more securely fastened to the ribs. Devices which will have the effect of preventing tears from spreading should be considered. Makers should be advised that the top surface alone should be capable of supporting the full load.

(ix) The makers should be required to furnish satisfactory evidence as to the strength of construction and the factor of safety allowed. In this special attention should be paid to the manner in which the engine is secured to the frame.

(x) Engine breakages should be systematically investigated and reported on, and the reports should be submitted to the Advisory Committee for Aeronautics.

(xi) No machine should be taken into use until after examination and approved test, and all machines should be regularly inspected, especially after any serious damage or repair. Parts of machines in course of construction should be inspected and passed before being assembled.

(xii) Two or three skilled mechanics for each squadron should be specially engaged for a time to act as instructors and to set a standard of technical workmanship.

(xiii) In case of any serious accident, care should be taken to preserve and identify damaged portions of the machine which may help to account for the cause. It is desirable to obtain the assistance of the police authorities in this matter.

The subject will be discussed in detail in our next issue.—W. E. de B. W.

What to See at Olympia—Part I.

Aeros, Ltd., will exhibit (besides the speedometer, inclinograph, compass, and other accessories which were recently mentioned in The Aeroplane) the well-known and highly successful Warren safety helmet, with its new arrangement for attaching strapless goggles, aviation suits and top-boots in unusually flexible leather, safety belts with emergency quick release, electric headlights and dash-board illumination devices, lubricants, structural accessories, and various hangar requisites.

Messrs. Rubery, Owen and Co., who are famous for pressed steelwork, will show their patent quick-release gears and some special bolts fitted with lubricators, which ought to attract attention. Apart from these accessories, the firm will exhibit a great variety of important small parts in aluminium and steel of special grades. Their specially pressed engine bearers are worthy of close inspection. They will also show Fox's patent wire-bending pliers.

Dover, Ltd., of Northampton, will show their patent Exonite steering wheels, with ribbed grip, lever handles, rods and tubes of the same material. They will also show sheets of transparent "Non-Flam" Exonite, and Exonite-covered wires, as well as "dopes," lacquers, and varnishes for aeroplane.

The Stern Sonneborn Oil Co. will show a full range of Sternol oils and lubricants. They will demonstrate, upon the Sternol patent oil-testing machine, the lubricating properties of their oils and greases.

"Geographia," Ltd., will exhibit the Alexander-Gross "Anti-drift" compass, and the Alexander-Gross Bearing-finder, the Saf Speed-indicator, various barographs, as well as aviation maps, and map-cases of the Doroule and Geographia patterns.

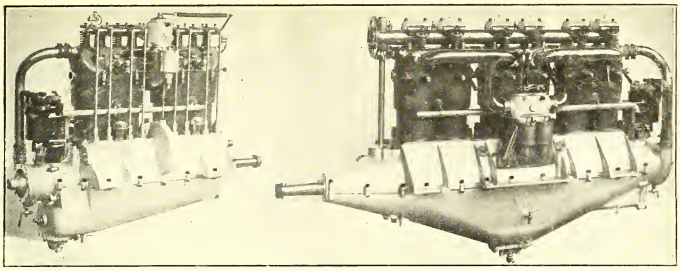
Burroughs, Wellcome and Co., Ltd., will show several forms of their celebrated "Tabloid" first-aid outfits, varying in size from the comprehensive though compact equipment suitable for hangar or workshop, to the fascinating little "No. 706," which occupies no more space than a cigarette case, and so is eminently adapted to the use of aviators when touring about the country.

Joseph Owen and Sons will show silver spruce, long straight grained English oak, hickory and ash skids, mahogany, black walnut, French walnut for propellers, and various other woods suitable for aeroplane work.

C. C. Wakefield and Co. will show "Castrol" in which castor oil and mineral oil are blended in proportions which are said to eliminate the disadvantages of either sort.

Messrs. Renault will show three engines of their standard V-shaped type, of 40, 70, and 100 h.p., having 4, 8, and 12 cylinders respectively. Of these the 70-h.p. is probably the most popular, being used by Maurice Farman and by the British War Office to a large extent.

The Benz Company will exhibit a four-cylinder water-cooled motor of 100 h.p. at 1,250 r.p.m. The cylinders measure 130 millimetres by 180 millimetres. They are of fine cast iron. Certain working parts are duplicated; there are, for instance, two separate magneto systems, and two independent springs to each valve. The company emphasize the lack of vibration, the excellence of combination, and the economical working of the engine. This motor gained the "Kaiser Preis" in the recent German trials.



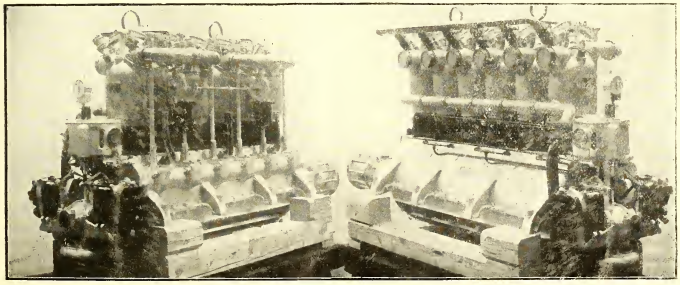
The 65-70 h.p. and the 100 h.p. Milnes-Daimler-Mercédés motor.

The Milnes-Daimler-Mercédés exhibit will probably not include all four of their aero-motors. The smallest of these engines (which will be exhibited) develops 70 h.p. at 1,400 r.p.m. It has four cylinders, water-cooled, 120 mm. by 140 mm., and weighs, complete with magnetos, oil and water pumps, all pipes and connections, 308 lbs., or about 4.4 lbs. per horse-power. This motor costs £385. The 80-h.p. engine has six cylinders measuring 105 mm. by 140 mm. and weighs 312 lbs., or 3.9 lbs. per horse-power. Its cost is £485. The 90-h.p. engine has four cylinders, 140 mm. by 150 mm., weighs 400 lbs., or 4.4 lbs. per horse-power, and costs £510. The largest engine of all, which develops 100 h.p. at 3,500 r.p.m., has six cylinders, 120 mm. by 140 mm., weighs 444 lbs., or 4.44 lbs. per horse-power, and costs £585. The illustrations accompanying this note are of the 70 and 100 h.p. models, which show the design to be both neat and compact. It will be noticed that all valves are overhead, and that in the larger engines the valve mechanism is run by an overhead camshaft, bevel-driven. The three higher-powered engines are each provided with two magnetos. Carburettors are of the company's own design; lubrication is forced; oil capacity is provided, normally, for a six-hour non-stop run; and, finally, the petrol consumption for all types is 0.075 gallons per horse-power-hour.

The Austrian Daimler Motor Co. will exhibit two engines, f 65 h.p. and 120 h.p. The first of these is a vertical water-cooled four-cylinder motor with a bore of 120 mm. and a stroke of 140 mm. Its normal speed is 1,350 r.p.m. Lubrication is pressure-fed. Valves are in cylinder head. Ignition is double, by magneto and accumulator. The carburettor is automatic and hot-water jacketed. Petrol consumption, 0.075 gallons per hour. The weight is 225 lbs., about 2.1 lbs. per horse-power. Price, £495. The 120-h.p. engine has six cylinders, 130 mm. by 175 mm., and turns at 1,200 r.p.m. Special laminated springs are used for the valves. Two jacketed carburettors are used. Two independent synchronised magnetos are fitted, with one of which is incorporated a self-starter. The weight of this engine is 450 lbs. The cost is £850. In other details the engines are similar. The crank-cases are prolonged to contain the load and thrust ball-races. This company makes two other aero engines, a 40-h.p. four-cylinder (100 mm. by 120 mm.), speed 1,450 r.p.m., weight 180 lbs., price £315; and a 90-h.p. six-cylinder (120 mm. by 140 mm.), speed 1,300 r.p.m., weight 360 lbs., price £625. The economy of these engines was well proven in the Military Competition of 1912. Beside many private users, the A.-D. Company number among their customers many European Governments.

The Vacuum Oil Co. will show various types of "Vacuum Mobiloils" and greases suitable for the lubrication of aeroplane engines. It will be remembered that these lubricants were used with great success in the 60-80-h.p. and 100-h.p. Green engines which Mr. Cody used in the Michelin competitions and in the Austro-Daimler with which he won the Military Competition of 1912.

The N.A.G. Company, whose engines are used exclusively in



The 120 h.p. Austrian Daimler engine for the Olympia Show.

the German Parsifal airships, will exhibit two stationary vertical water-cooled aero motors, designated F2 and F4. It is possible that they will exhibit also the airship engine (Model 301) which won the War Minister's prize in the recent "Kaiser Preis" competition, as announced in last week's Aeroplane. Type F2 is a four-cylinder engine, weighing, without oil and water, 212 lbs., and developing 55 h.p. at 1,600 r.p.m., this works out at 3.74 lbs. per h.p. Type F4 is a six-cylinder engine, weighing 507 lbs., and developing 125 h.p. at 1,250 r.p.m., or 3.3 lbs. per h.p. This engine is fitted with two magnetos. Type F3, which will probably not be shown, is a 100-h.p. four-cylinder, similar in its essentials to the six-cylinder engine, and working at the same speed. Lubrication in all cases is automatic and forced, the oil tank being underneath the crank chamber. The airship engine Model 301 is a heavier and slower-running six-cylinder motor, weighing 771·6 lbs., and developing 110 h.p. at about 1,100 r.p.m. The makers lay great stress upon the accessibility and economical working of this engine. The N.A.G. Company are the German concessionaires of the Wright biplanes, and have built many machines for the German Government.

The General Aviation Contractors, Ltd., will exhibit several Anzani engines, notably the 30-h.p. "V" type three-cylinder; the 40-45-h.p. six-cylinder; the 50-60-h.p. six-cylinder; the 80-h.p. ten-cylinder; and the 100-110-h.p. ten-cylinder. They will also show three eight-cylinder water-cooled "V"-type Laviator motors of 80, 120, and 200 h.p. respectively. On their accessory stand they will show several models of the "Rapid" propellers, including the new half-copper-sheathed type for water-plane work; a selection of Hué's aero instruments, altimeters, barographs, watches, etc. The Mono-dep compass, Gnomol castor oil, Avlol (a new cylinder oil for water-cooled engines), Roold helmets, gloves, and other items of aviation costumery, including their own combination suit in black leather of fine quality. They will also show the G.A.C. wrislet chronographs and aero clocks; and, finally, the various Emaillite products, dope sheeting, fabric, etc.

The British Petroleum Company will exhibit the well-known packages used in the distribution of Shell motor spirit.

The Hoyt Metal Company will exhibit their Standard Babbit or anti-friction metal.

M. Chauvière will show several types of his famous Integral propellers. Perhaps the most interesting of these will be the new partially brass-sheathed hydro-aeroplane propeller. Their immunity from the effects of moisture will be illustated by exhibiting one of these propellers immersed in water. Aviators will be interested to learn that M. Chauvière is applying himself to the design of a special propeller suited to the Anzani 35-h.p. engine. Model builders will find at this stand much to attract them, for M. Chauvière makes miniature propellers also.

Dunhills, Ltd., will exhibit many aero accessories, such as barographs, height recorders, speed indicators and compasses, notably the Gross Anti-drift compass. They will also show maps, map-cases, and various articles of costume suitable for aviation purposes, particularly a pneumatic helmet of their own design.

The Wolseley Tool and Motor Car Co. will show three engines of the eight-cylinder 90 degrees V-type. The largest, which develops 120 h.p. at 1,150 r.p.m., is essentially a dirigible motor. The cylinders are separately cast, bore 5 inches, stroke 7 inches; the water-jackets are of spun aluminium; valves are mechanically operated; lubrication is forced. The weight, including pumps, pipes, and magneto, is 600 lbs. This engine is in a general way similar to those supplied to the Italian Government for dirigible work. The 60-h.p. motor, which resembles the Wolseley light hydroplane engine, has its cylinders cast in pairs; bone 3⅜ inches, stroke 5½ inches. The weight, including pumps, pipes, and magneto, is 350 lbs., about 5.8 lbs. per h.p. The third engine is an entirely new departure. It is a 60/80 motor with air-cooled cylinder heads and valve boxes; thus the radiator is of small dimensions. The bench tests of this new motor have given excellent results.

The Hart Engine Co. will exhibit a rotary engine of nine cylinders, about a single-throw crank. The cylinder dimensions are: bore, 5 inches; stroke, 6 inches. The nominal horse-power is 120.

Messrs. S. Smith and Son will show watches, aneroids, headlights, and aluminium revolution indicators, specially designed for aeronautical purposes; also they will exhibit various driving gears to adopt these for the Gnome and other motors.

Some Stability Devices.

On January 29th Mr. Mervyn O'Gorman delivered to the Aeronautical Society a most interesting lecture on stability devices of various sorts. He said that devices thus spoken of are for the most part not concerned with stability of aircraft in the strict sense; they mostly pay no heed to the rotational energy stored in the aeroplane's mass, or the oscillation due thereto, or to their decrement, but still they strive, in a vague way, after one of the following:—(a) Its safety in the air; (b) its staying truly on its path; (c) its steadiness as a gun-platform or view-platform, and as such are worthy of review.

Safety does not follow from stability. The three are in some measure mutually exclusive, so he chiefly dwelt on the urgent one—the first.

To be in the air at all aeroplanes must move through it at a certain minimum speed, and not to break up they must not go faster than a certain maximum. The upper limit concerns the strength of the construction, and no device gives safety to the flier unless he is protected from unwittingly reaching the lower limit.

The minimum safe speed is the speed below which the rudder, elevator, or warp ceases to have quick enough control to outvie the gustiness of the air, and this minimum depends at any time on the irregularity of the wind. Engine failure must be reckoned with, and hence gravity must work the device. The effect derived from the controls falls off as the square of the air speed past them. Accordingly, though some freedom from dependence on gusts is achieved when the propeller stream is made to pass over the wing flaps, as in the "two-propeller" [tractor?—Ed.] machines of the Wright and Short types, the low limit of slow flying must not be based on the speed with engines turning, but when the engines are stopped.

We may conclude:—(i) That, in examining the merits of a device, the omission or provision of a speed maintainer is of grave importance; (ii) that, should the aeroplane give a large range between the slowest gliding speed and the fast flying speed, this adds to safety by moving the danger limits farther away from each other; (iii) that automatic schemes must not avail themselves of this full range, but must needs keep the speed well above any of the tricky limits; (iv) that, if the extreme limit is approached, powerful warp control and light wing loading will be useful.

The vertical gust is a frequent additional disturber of the peace of fliers, and we must give it more special consideration than it has yet had, and, in doing so, observe that an up-current, unfortunately, results in a forward movement of the centre of lift of a wing curve, which is precisely what we do not want.

A rough mental picture of the shape of the air movements should help consideration, and the following, based on a note of Mr. Mallock's, though obvious when stated, is suggestive. It is common knowledge that: (a) Winds high up are speedy, but more uniform; (b) gusts, or variations of speed, occur with all winds near the ground; (c) the stronger the wind the stronger the gusts, broadly speaking.

This receives some explanation if compared to the flow of water by the side of a ship. Towards the stern of a ship the water near the side and a few feet out is seen in eddies with vertical axes. The smaller eddies are nearer in, and are the most violent—the larger are farther out—the speed of rotation diminishing in eddies farther out. The direction of rotation of the eddies is as if they were rolling like wheels on the ship's side. In the air the same thing happens, save that, owing to the greater kinematic viscosity, the belts of eddies extend

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farther, and that, owing to the immense extent of the land, the phenomenon is aggravated. A tall chimney smoking in a level country gives rise to patterns which correspond very well with eddies having horizontal axes.

Winds at Night.

Probably a large extent of land would so retard the air by friction that dwellers in a reasonably level country would nearly always live in a calm such as normally occurs every night. It is the heat of the day and the different rate of heat absorption, with change of buoyancy between wet and dry air, which causes a mix up of the lower or calm levels with the upper windy ones, and thus a short time after dawn we say that the wind rises, whereas the upper winds had never stopped—they are merely beginning to penetrate down to us—putting an end to those quiet hours of flying which we associate with the early morning. It is the equable temperature of the night which allows the skin friction between earth and air to establish a steady state, unless the winds above are unusually violent.

The upshot is that vertical air movements are to be expected not only on high, but close to the ground; and since an eddy with a horizontal axis involves as much vertical as horizontal disturbance, occur about as freely as horizontal gusts. There is this difference between them to a flier that, when near the earth, there is no steady vertical wind of which the gustiness is merely a percentage variation. The vertical movement is probably entered into more suddenly, and may perhaps be the more difficult to circumvent for this reason, but any record of experience would be valuable.

Among the known devices which purport to keep an aeroplane within its safe limits of speed we may name: (1) the Wright Bros. automatic elevator control; (2) the "Doutre"; and (3), more important than either, the almost universally used longitudinal vee; (4) the duck or "S" type aeroplane; (5) screw propulsion; (6) small flywheelage.

It is not usual to ascribe to the longiudinal V, open upwards between main and tail planes, the function of a speed maintainer; but that speed maintenance is one of the chief and most valuable effects of this disposition of planes has been elegantly shown by Mr. Alexander See in six steps, somewhat as follows:—

(a) If the speed falls off, the supply of supporting air fails, and the aeroplane comes downwards.

(b) Owing to this descent, the angle of incidence on the air is increased.

(c) The increase of angle of incidence causes the centre of total pressure of a veed aeroplane to travel backwards, and gives rise to a diving couple.

(d) This dive having been started, the angle of incidence is thereby made normal again, but the travel being downwards, the machine accelerates.

(e) The speed being increased by the acceleration, the support derived from the air is increased, and the descent ceases.

(f) The descent having ceased, the angle of incidence is diminished, the centre of pressure of the whole travels forward, giving rise to a "nose-up" couple, which sets the aeroplane level again. (Whether this swing back is accompanied by oscillations or not is overlooked.)

If the speed had at first increased instead of falling off as assumed at (a), the converse of all this is true. Thus, an aeroplane is guarded from risky longitudinal movement not when it opposes itself to any pitching, but, on the contrary, when it takes on by itself such pitching up or down as shall secure a constancy of speed "within limits."

"Tail First" Machines.

The "tail-first" aeroplane, or "S" type, as Mr. O'Gorman calls it in compliment to M. Santos-Dumont, its first exponent, as an improved speed maintainer has been more used in small models, but for large craft also the maintenance of air speed automatically is probably improved by the "duck" form, at least, in horizontal gusts. The small forward plane is the first to enter the region of altered air speed, and if the gust makes the air speed fall off, this plane dives in anticipation of the loss of air speed by the main wings. It thereby causes the main mass to rotate on an axis roughly parallel to and located somewhere near the main wing spars. This rotation of the main mass for a dive is effected the more quickly because it is accompanied by less air damping than the downward acceleration of the main mass itself. In the case of the Blériot or Farman type of aeroplane, where the large mass is in front, the dampling is greater, since the wing loading is necessarily less than that of the front plane of the "S" type.

Some merit may be found in relation to up-gusts in the "S" type. If we select the wing shape for best efficiency for the main wings, we may so choose the loading and wing shape of the front plane that it will be sensitive to changes of speed but less sensitive to changes of angle of attitude. This is possible because we can select with much freedom the angle of attack of the small plane when it is in front, whereas we are restricted to narrower limits of positive angle when the small plane is behind.

Screws as Stabilisers.

Screw propulsion has an inherent tendency to favour constancy of air speed, because a screw gives less pull during a head-on gust and more during a following gust. The situation of the propeller in front has an earlier steadying effect, and therefore a more useful one, than if placed behind. This may be made greater with special propellers. The placing of a pair of propellers, one in front of each wing, also assists constancy of air speed over each wing, a feature which has either escaped observation or mention from those who use this arrangement. If the line of screw thrust is below the centre of gravity, the movement of the mass under its inertia tends to equalise speed by causing a pitch down when the engine fails and up when its pull increases.

Mr. O'Gorman commented on the vibration caused by the breakage of one blade of a two-blade propeller, with consequent engine-racing, endangering the fuselage and with it the wing supports. The multi-blade propeller exercises less thrust per blade, so that the engine races less on breakage, the out-of-balance thrust is less and the out-of-balance mass is less. All these make for safety.

The less the flywheelage of the aeroplane round the axis parallel to the wing spar and the larger the tail the less the pitching movement. Very little is published about the moment of inertia of various aeroplanes. To give a concrete basis of comparison he mentioned that B.E.2 has a flywheelage of 42,000 pounds-feet squared, a tail with a moment of inertia of 21,000 pounds-feet squared round the same axis, and a tail area of 55 square feet. It would be useful if other makers would publish their figures.

Humanity and Acceleration.

Man is so constituted that sensation only informs him of changes of acceleration. Quick rate of change is much noticed, slow change nearly escapes attention. This sensitiveness accounts for the pleasure in dancing, and also causes sea-sickness. Sir Francis Galton's system of testing sensitiveness to nerve reaction might be useful in testing a man's suitability to become a pilot.

Quick response of the aeroplane is therefore doubly valuable both in the detection of the disturbance and in its remedying, and from this follows the utility of concentrating masses.

The inequality of drag which exists between a flap warped to lift and a flap warped to depress is notorious, and undesirable because, occurring usually on the wrong wing, it calls for correction by ruddering. In May, 1911, Mr. V. Gregory brought forward two methods of meeting this: one by introducing a differential gear in the controls, the other by cross-connecting the wires to the flaps so as to achieve equality of pull upon them. This secures an approach to balance of drag.

Many aeroplanes, notably monoplanes and probably waterplanes, have an excess of head resistance below the axis of symmetry of the fuselage, supposed to contain the centre of gravity, owing to the alighting chassis wheels, warping gear, etc. When the air speed becomes high, this gives rise to an important diving moment which aggravates the diving couple, due to the movement of the centre of lift towards the trailing edge.

A dangerous case may occur when an aeroplane descends by diving with a down-current and emerges therefrom at the foot of the descent—an incident which we are not entitled to say shall not occur in cross-country work. If the elevator plane alone deals with this, a pressure of 100 lbs. at the extremity of the tail of a well-known machine will be required to counter-

act the upsetting couple, apart from the effort required to "straighten out." If we cannot yet overcome the travel of the pressure resultant, we can at least study symmetry of head resistance to begin with. Head resistance about the axis might even be invoked to counter the other trouble; it, in fact, acts in the right direction in an aeroplane with which Mr. O'Gorman is familiar.

Pendula.

Many enthusiasts for "horizontality maintainers" have concluded that a hanging weight may be said to "know" better than the flier does the direction of the earth below them. They have accordingly used pendulum devices. The majority of these are of an extreme simplicity, and are produced in disregard of the facts (1) that when the mass of a pendulum is being accelerated it is no longer only subject to the directive force of gravity, and (2) that the string of a freely suspended mass does not hang down the vertical when the point of suspension has a sideways acceleration or retardation.

Where the effects of centripetal acceleration on turning are recognised, merit for the improved device is claimed from the fact that the mass hangs down the line of the resultant of the acceleration due to gravity and that due to centrifugal force. In certain cases good flying is certainly effected with aeroplanes so arranged—machines with an abnormally low centre of gravity intentionally so placed, like the Pischoff, etc., and most water-planes whose centre of gravity is (with reluctance by the designer) lowered owing to the mass of the floats, or when it is deliberately lowered in the hope of getting better seaworthiness are examples of the category.

Mr. O'Gorman then described briefly the ingenious if useless devices of Laycock, Major Renauld, Gawlett, Wentland, Schmitt, Thompson, Mitchell, Adam, Colonel Dufier, and others.

Numerous persons have thought that if provision were made to prevent the total pressure under one wing from exceeding that under the other the aeroplane would always remain laterally in the same horizontal position as it started from. Thus Bréguet's and Caudron's springy wing ribs, R. E. P.'s (patent 10575, 1909) spring-supported wing span, etc. We may include in this the standard scheme of balancing by cross-connecting the warps. The moment we consider the side-slip inevitably involved by change of course, it becomes clear that perfect balance of fin area above and below some centre of lateral pressure would be necessary also, always supposing horizontality to be desirable.

Ramel and Bille (28778, December 11, 1909) propose to equalise wing pressures by allowing the air to spill out of the wing which has most lifting pressure by letting it tilt up, thereby bringing the wing which has least lifting pressure to tilt down, while the main mass of the flier and motor and fuselage remain unrotated, save through the indirect action of springs which connect the wings to the main mass. Here we have a vague attempt to keep the man's seat more horizontal, so that there is an element of the pendulum in the device.

There is one matter in relation to the equalising of wing pressure which must on no account be lost sight of, whether we use springs, cross-connected warps, or pneumatic equalisers, etc., and that is, the more perfect the equalising the more completely the effect of the dihedral angle is wiped out, since the dihedral angle only acts by reason of the difference of pressure established under a descending and a rising wing.

Accordingly, a dihedral angle has none of its usually recognised effect if the cross-connection of the warps of the two wings is frictionless, if the warp be sufficiently ample, and if it be not controlled by the springiness of the warped spar or otherwise. This has been experimentally proved on B.E.2. With cross-connected flaps and rigid wings, as in the Farman aeroplanes, this loss of dihedral effect does not hold to anything like the same extent.

Not the slightest importance can attach to fins except in the case of side-slips and side-gusts. Moreover, the effect on fins of vertical gusts when the aeroplane is banked reduces itself eventually to a side-gust from the point of view of the aeroplane.

Wildeblood's invention is an example of the difficulty so recurrent in flying work, that what is a safeguard against disturbance by side-gusts provides a danger in the event of side-slip.

The idea is original. The flaps face inwards and hinge on their outer edges when a side-gust comes; tending to raise the left wing, it moves ineffectually over the left flap and, meeting the right flap, raises it and so puts it into an attitude to give a strong lift by suitable shaping, the upward pressure under the right flap so obtained is equal to the extra lift under the left wing, and balance is maintained.

If, however, side-slip occurs towards the left side, the right flap is raised and catches the air as before, thereby precipitating the catastrophe by increasing the lateral slope.

Gyroscopic Action.

A large gyroscope rotating (not as the Gnome usually does, axially with the aeroplane, but running as if it were a wheel running forward) will tend to maintain horizontality against lateral rolling, because it will tend to advance the wing which is lowered; this tendency, if encouraged, will give it extra lift. This applies to both wings, and so far we have the germ of a device. It has no effect on pitching. If, however, we try to bank, it will oppose itself thereto, a matter of no great moment, since we can easily overpower it. The chief objection would seem to be that it will tend to maintain any banked attitude once it has been reached, including dangerous banks on to which we may be thrown by a strong gust.

There are two matters of interest in connection with gyroscopes of the dimensions of the 100-h.p. Gnome engine: one is to know what is the order of magnitude of the gyrostatic couple, the other is to realise that the gyrostatic couple vanishes as soon as the aeroplane begins to yield at the rate called for by the precession. This second fact is almost always ignored by the vague inventor, of whom there are so many, and who count on a continuance of the effect until the righting is achieved. For all this, it is useful to have the results of calculation and experiments which were made for a different purpose, and which show the disturbing effect of a 100-h.p. Gnome engine and propeller together.

This work showed that:—

(a) The gyrostatic effect of the propeller alone is a trifle greater than that of the Gnome engine which drives it, say, as 184 lbs.-feet is to 140 lbs.-feet, when the rate of diving or turning is one-third of a radian per second.

(b) It is unnecessary to make the two effects additive, since by the simple expedient of gearing them in opposite directions the couple can be reduced to insignificant dimensions.

(c) The gyro effect of even 100-h.p. Gnome is not nearly as important as often supposed, and can be countered by elevator and warp movements of small dimensions, even when turns and dips of considerable sharpness are executed.

(d) The developing of a large gyro couple can be caused only by trick flying of a kind, in any case, to be discountenanced.

(e) The total gyro effect of engine and propeller together in the above case is 324 lbs.-feet for turning by suddering one revolution in 20 seconds.

(f) The total gyro effect of engine and propeller is 330 lbs.-feet for turning down by elevator at the fast rate, which would relieve the pilot of any sensation of weight on his seat in a 60-m.p.h. aeroplane.

Even these maximum couples are well within the controls. They give just the same sensation and call for the same correction as gusts of moderate force, for which the flier must, in any case, be prepared.

Mr. O'Gorman's Device.

Mr. O'Gorman mentioned a device of his own bearing on this subject. Whatever disturbance an aeroplane is suffering from, its rectification inevitably takes time, during which the machine covers an amount of space which may cause a critical situation. Accordingly, therefore, we must seek for prevention rather than cure. The human operation of the controls to outvie the effect of gusts is never more than a cure. Man cannot feel the velocity of his movements, nor even an acceleration, but he is extraordinarily sensitive to a change of acceleration. The lecturer continued: "So long as man control dominates, a concentration of the mass to allow this sensitiveness to operate is required, while the conditions of aeroplane building inevitably distribute the masses a good deal. On my earliest flights I noticed with surprise the distinctness of the double blow produced by a gust first on the front plane and then on the back

plane, and from that concluded that a forward feeler would anticipate the truth. This was three years ago. To make this anticipation quantitative it occurred to me that the best forecast of the probable effect of the gust would be conveyed by a measure of its acceleration. (Note.—Not the acceleration of the aeroplane in relation to the air which it is in, but of the gust.) Any air-accelerometer would do, and as priority of thought is interesting at least to the inventor, I mentioned the whole matter in detail to Captain Fulton, R.A., about twenty months ago. A simple form consists of a light plate of good aspect ratio swar which hangs a mass (duly sheltered from the wind). The amount of separation occurring between the vane and the bob measures the air acceleration. One feeler is placed forward of each wing. A sort of caliper which measures this separation is made to control a pneumatic motor which alters the curvature of the appropriate wing negatively for a positive acceleration, and vice versa. If both feelers get a head-on gust both act. It will be observed that, as there is pre-warning of the movement of the centre of pressure, this can also be used to inflect the tail so as to counteract the upsetting moment due to this movement of the centre of pressure. A vertical up-gust has the effect of separating the vane and bob as if it was an acceleration, and so long as the vertical gust lasts the aeroplane needs less lift, and the flattening out of the wings is therefore appropriate. A peculiar feature of the device is that it utilises the one, and I believe only, air-difference which exists between a side-gust and a side-slip—viz., that the gust strikes first one wing and then the other, whereas a side-slip strikes both simultaneously. Thus, on a side-slip occurring, both feelers are equally affected so long as there is side acceleration and no out-of-balance warping is introduced to aggravate the side-slip. Side-slip is cured by the action of the top fin, which should provide against it. The device, by anticipating the strength of the gust, eliminates the objection to a top fin, which is that it forms a target for a gust. Throughout all this it is well to remember that a gust is not a gust as far as the aeroplane is is concerned as soon as the aeroplane, as a whole, has taken up the speed and direction which the gust seeks to impose. Accordingly, what appears to be a gust to a fixed observer on a tower ceases to be so to the aeroplane immersed in it. This is the foundation of the use of the air-accelerometer."

After the lecture, Mr. J. W. Dunne gave a detailed explanation of his automatic stability machine. This explanation is too important to be dealt with here, and the whole working of the Dunne system will be described fully in an early issue of The Aeroplane. Mr. A. P. Thurston also spoke.

It is understood that, after Major Sykes' lecture, which is the next on the list, an evening will be given specially to a discussion on the whole question of stability devices.

General Henderson's Comments.

In closing the meeting, Brigadier-General David Henderson, C.B., D.S.O., who presided, touched on the allied but opposed questions of stability and steadiness, and remarked that the cumulative effect of all improvements meant progress. He recommended that constructors should seek improvements in two directions—firstly, towards stability, for it made a pilot's work easier if a machine looked after itself. Some do so. Some are good in still air, but a self-warping machine made it more difficult to fly in a wind. Others were equally troublesome in calm or wind. Some small models flew well under any conditions, and it should be possible to apply controls to such types if built in full size. Secondly, efforts should be made to secure the safety of the pilot if the machine got beyond his control, so that the machine would come back quickly to its flying position. Flying would never become a sport or a commercial proposition till developments were made in these ways.

The Oldest Firm in the Country.

Messrs. T. W. K. Clarke and Co. announce that they are moving to more commodious and up-to-date premises at High Street, Hampton Wick, close to Kingston Bridge. It will be remembered that T. W. K. Clarke and Co. was the first aeronautical firm to be established in Great Britain, and it is interesting to see that increasing business has warranted a move. The general aeronautical and model making business will be carried on as usual, and the acetylene welding department, which has made a big name for itself in the aeroplane industry will receive special attention. One learns that an excellent export business is being done both in models and parts for full-sized machines, and altogether the firm are looking forward to a prosperous season.

Mr. Gustav Hamel at Coventry.

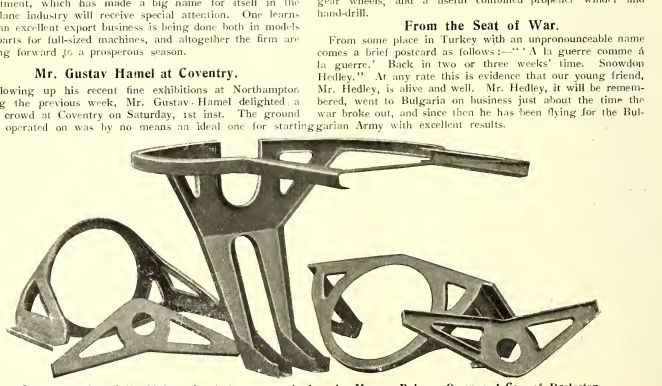
Following up his recent fine exhibitions at Northampton during the previous week, Mr. Gustav Hamel delighted a large crowd at Coventry on Saturday, 1st inst. The ground he operated on was by no means an ideal one for starting and alighting, but in spite of the confined space he handled his 50-h.p. Blériot with his usual consummate ease. He gave two fine flights during the afternoon and met with an ovation at the finish.

For Model Makers.

The Broadstairs Model Co., 10, Broadway, Broadstairs, send a neat illustrated catalogue of models which will be of interest to those experimenting in this direction. Items of particular interest are floats for model hydro-aeroplanes, neat gear wheels, and a useful combined propeller winder and hand-drill.

From the Seat of War.

From some place in Turkey with an unpronounceable name comes a brief postcard as follows:—"'A la guerre comme á la guerre.' Back in two or three weeks' time. Snowdon Hedley." At any rate this is evidence that our young friend, Mr. Hedley, is alive and well. Mr. Hedley, it will be remembered, went to Bulgaria on business just about the time the war broke out, and since then he has been flying for the Bulgarian Army with excellent results.



Some examples of the high-grade steel press work done by Messrs. Rubery, Owen and Co., of Darlaston.

The Week's Work.

MONDAY, January 27th.

R.F.C., Central Flying School.—Fine, clear and slight westerly wind, very bumpy. On Avro 404, Capt. Fulton, R.F.A., 8 mins. On Avro 406, Capt. Fulton twice 8 mins. On Maurice Farman 403, Lieut. Marix 20 mins.; Lieut. Harvey 13 mins. On Maurice Farman 411, Lieut. Longmore, R.N., with Lieut. Ross 18 and 13 mins., with Lieut. Kennedy 20 and 27 mins. On Maurice Farman 415, Major Trenchard 19 mins.; Engineer Lieut. Randall, R.N., 22 mins.; Asst. Paymr. Lidderdale 15 mins. On Maurice Farman 418 Lieut. Harvey 6, 9 and 11 mins.; Lieut. Marix 10 mins.; Lieut. Warter 10 and 10 mins.; Lieut. Boyle 13 and 18 mins.; Lieut. Burroughs 18 and 13 mins. On B.E. 416, Lieut. Arthur 17 and 30 mins. On B.E. 417, Capt. Salmond 6 mins. alone, with Lieut. Soames 17 mins., with Lieut. Vernon 8 mins. On Short 401, Major Gerrard, R.M.L.I., with Sergt. Spencer 9 mins., with Sergt. Wright 13 mins., with Lieut. Oliver 17 and 10 mins., with Ldg. Seaman Ashton 11 mins., with Sergt. Vagg 20 mins., with Capt. Lithgow, R.M.L.I., 14 mins. On Short 402, Lieut. Roupell 20 mins.; Lieut. Bowhill 12 and twice 15 mins.

R.F.C., Farnborough.—Mist in early morning, light S.E. wind about 5 m.p.h. On Bréguet biplane 211, Lieut. Shephard 17 mins. at 2,500 ft., then with Lieut. Festing 9 mins. at 1,000 ft. Mr. S. F. Cody on new biplane doing R.A.F. tests. On B.E.2 Mr. May circuits. Mr. de Havilland on new warplane short flight. Major Raleigh on Bréguet 211 two flights at 500 ft. On B.E. 200, Lieut. Joubert de la Ferté 40 mins. to 4,000 ft. On B.E. 201, Lieut. Lawrence 5 mins. at 300 ft., then Capt. Darbyshire took over and did four flights at 300 ft.

Airship "Gamma" out under Capt. Waterlow, R.E., piloted by Sergt. Carter—four trips round Farnborough.

On Bréguet 213, Major Raleigh 5 mins. at 300 ft., then with Mechanic Jerrard. On same machine Capt. Board, Lieut. Chinnery, and Lieut. MacLean, Major Raleigh then 5 mins. at 200 ft.

In afternoon the airship "Gamma" out again under Commander Masterman, R.N., to Epsom.

On **B.E. 217**, Mr. de Havilland circuits. Mr. Busk and Mr. Parr both on B.E.2, and Mr. Cody for further tests. On Bréguet 210, Sergt. Hunter with Capt. Board to Guildford and back in 27 mins., but in landing down wind wheels collapsed, fortunately without further damage. On B.E. 303, with staggered planes, Lieut. Lawrence 4 mins. at 150 ft., then taking Capt. Musgrave 4 min. at 200 ft., then Lieut. Lawrence alone two flights 18 mins. each at 600 ft..

Hendon.—At Grahame-White School, heavy mist prevented pupils from getting practice until the afternoon, when at 3.45 Instructor Manton took Mr. Bayetto as passenger for 10 mins. on No. 5. Mr. Cheeseman straights on mono., later Mr. Manton again out with Mr. Bayetto 15 min. Passengers also up with Mr. Manton.

At. W. H. Ewen School, at 2 p.m. under M. Baumann, Messrs. E. T. Prosser, H. Stewart and J. H. Torr were all hopping and straights on mono. No. 2. During afternoon Mr. Ewen on 60-h.p. Caudron two-seater took as passenger Mr. J. R. Renwick, secretary of the company.

Brooklands.—At Vickers School, Mr. Barnwell out on No. 5 mono. Messrs. Knight and Barnwell testing No. 3 mono. Col. Hoskins also on No. 3.

At Bristol School, Messrs. Merriam, Archer, Nevile and Bendall, Lieuts. Crawford-Kehrmann, MacLean, and Lee out. Mr. Nevile took brevet in strong wind.

Salisbury Plain.—Bristol School, Mr. Jullerot out on 80 h.p. mono. Mr. England tuition to Capt. Landon and Lieut. Vaughan. Mr. Tod practising. Messrs. Jullerot, England, and Harrison testing.

TUESDAY, January 28th.

R.F.C. Central Flying School.—Very strong westerly wind, some rain. No flying.

R.F.C., Farnborough.—Calm, misty morning; light east wind. On B.E. 70-h.p. Gnome, Mr. de Havilland tests. On Bréguet 211, Sergt. Hunter a straight, then Major Raleigh 2 mins. and 7 mins. On Bréguet 213 Major Raleigh 5 mins. at 200 ft., then with Mechanic Vaisey, Lieuts. Chinnery and MacLean. On same Major Raleigh with Capt. Board 5 mins. at 200 ft., after which Capt. Beor out. On B.E. 303 Sergt.-Major Thomas rolling for 2½ hours.

Brooklands.—At Vickers School, in early morning Major Cameron out for first time in mono, doing good straights on No. 3.

At Bristol School.—Messrs. Merriam, Bendall, Archer, and Lane, and Lieut. Crawford-Kehrmann out.

WEDNESDAY, January 29th.

R.F.C., Central Flying School.—Fine, clear and calm. On Avro 404, Air Mechanic Higginbottom with Ldg. Seaman Marchant 45, 10, and twice 20 mins.; Capt. Fulton, R.F.A., with Lieut. Rathbone 15 mins., with Lieut. Marks 15 mins., with Capt. Mellor 40 mins. On Avro 406, Capt. Fulton with Sergt. Goodchild 30 mins., with Lieut. Read 30 mins., with Lieut. Holt 15 mins., with Lieut. Littleton 20 mins., with Lieut. Small 20 mins.; Air Mechanic Higginbottom with Ldg. Seaman Marchant (twice) 10 mins., with Sergt. Goodchild 15 and 10 mins.

On Maurice Farman 411, Lieut. Longmore, R.N., with Lieut. Ross 26 and 10 mins., with Lieut. Kennedy 22 and 30 mins. On Maurice Farman 415, Asst. Paymaster Lidderdale 13 mins., Major Trenchard 25 mins., Master Mechanic T. O'Connor 10 mins., Lieut. Randall 18 mins., Air Mechanic Collis with Lieut. Kennedy 40 mins. On Maurice Farman 418, Capt. Millar 10 and 11 mins., Lieut. Courau 11 and 7 mins., Lieut. Boyle 12 and 10 mins., Lieut. Marix 12 and 10 mins., Lieut. Warter 7 and 4 mins., Lieut. Harvey 11 mins. On Maurice Farman 425, Lieut. Longmore with a passenger 12 mins.

On B.E.416, Lieut. Arthur 25 mins., Lieut. Burroughs 13 mins. On B.E. 417, Capt. Salmond with Lieut. McDonnell 20 mins., with Lieut. Vernon 18 mins., with Lieut. Bigsworth 11 mins., with Lieut. Burroughs 24 mins., with Lieut. Gibson 20 mins., with Lieut. Soames 35 mins., with Lieut. Dawin 5 mins.

On Short 401, Major Gerrard, R.M.L.I., with Capt. Lithgow, 3 mins., to Galops, Capt. Lithgow then going for brevet and taking it in good form, 18 mins. each half. Major Gerrard with Sergt. Vagg 5 mins.; during this flight the propeller hit and killed a partridge. [Evidently Service aviators also out for sport.] On Short 402, Lieut. Watkins 10 mins., Capt. Tucker 10 mins., Lieut. Unwin 10 mins., Lieut. Glanville 10 mins. On Henry Farman 420, Major Gerrard 6 mins., Capt. Tucker 5 mins.

R.F.C., Farnborough.—Very little wind, but thick fog. Airship "Gamma," under Capt. Waterlow, made trip to Dorking and back.

Salisbury Plain.—Bristol School, Mr. Jullerot, on tractor biplane, on school biplane with Capt. Landon, and on 80 mono. Mr. England with Capt. Landon on mono. Lieut. Vaughan and Messrs. Tower and Tod practising. Messrs. Harrison, Jullerot, England, Tower, Lieut. Vaughan, Col. Smeaton, and Capt. Landon up in afternoon.

THURSDAY, January 30th.

R.F.C., Central Flying School.—Inclement weather, no flying.

R.F.C., Farnborough.—Mist in early morning; sun broke through later in day. Wind south-west, about six to ten miles per hour. On Bréguet 213, Major Raleigh two 5 mins. flights (one with Mechanic Vaisey), then 10 mins. at 400 ft. Lieut. Chinnery also flew 213. Mr. de Havilland on staggered B.E.303 6 mins. at 150 ft., then taking Capt. Musgrave 15 mins. at 150 ft., after which Capt. Musgrave rolling. On B.E.201, Capt. Darbyshire 5 mins. at 400 ft. On B.E.200, Lieut. Joubert de la Ferté at 400 ft. 10 mins. and 8 mins.

Airship "Gamma" short flights.

Mr. de Havilland testing a B.E. type, built by Bristol Co. Machine appears to have a good turn of speed. Air Mechanic McCudden for 20 mins. testing Maurice Farman No. 216, after being repaired by R.A.F. Got up to 1,000 ft. and found air extremely bumpy. Major Raleigh for 10 mins. on Bréguet 210, testing after repairs.

Hendon.—At Grahame-White School.—Mr. Bayetto practising all day, also Mr. Cheeseman, both on monos, but no

biplane pupils turned up, so good opportunity for practice was missed. Mr. Manton on school biplanes tuning up. In afternoon, owing to weather, attendance was not large, but those at the London Aerodrome were rewarded with good exhibitions of flying, Mr. Manton taking passengers and flying the brevet biplane. Mr. Desoutter on 50-h.p. Blériot, giving usual fine demonstrations. Mr. Cheeseman flying biplane.

At W. H. Ewen School.—Outdoor practice started 10 a.m. Mr. Lewis Turner, after 60ft. on 35 Caudron, handed over to Lieut. M. W. Noel, who handled it with great confidence. Mr. J. H. Torr on school mono. No. 2, under M. Baumann.

At Deperdussin School.—Under Mr. Spratt, Mr. Valazzi circuits on No. 4. Then Mr. Spratt circuits on same machine; also Mr. Whitehouse. Mr. Phelps straights on No. 3.

At Blériot School.—Messrs. Williams and R. Desoutter on taxis in morning.

Brooklands.—At Bristol School, Messrs Merriam, Lane, and Archer, Lieuts. Crawford-Kehrmann and Blatherwick out, till fog stopped flying.

At Ducrocq School, Mr. J. Alcock made fine flight on Mr. Ducrocq's racing Farman.

Salisbury Plain.—Bristol School, M. Jullerot on mono. with Lieut. Vaughan.

Friday, January 31st.

Everywhere.—Weather hopeless. No flying.

Saturday, February 1st.

R.F.C., Central Flying School.—Fresh east wind, fine. Very bumpy. On Avro 404, Air Mechanic Higginbottom with Leading Seaman Marchant 30 mins.; Capt. Fulton, R.F.A., with Lieut. Small 20 mins., with Lieut. Rathbone 15 mins.; Lieut. Small 5 and 8 mins. On Avro 406, Capt. Fulton with Sergt. Jarvis 15 mins. on practice ground. On Maurice Farman 411, Lieut. Longmore, R.N., with Lieut Ross 38 mins., with Capt. Salmond 20 mins. On Maurice Farman 415, Lieut. Conran 60 mins.; Lieut. Kennedy 23 mins.; Lieut. Ross 20 mins. On Maurice Farman 418, Lieut. Harvey 13 and 20 mins.; Capt. Millar 13 and 21 mins.; Lieut Boyle 12 and 13 mins.; Lieut. Marix 15 mins.; Lieut. Conran 11 mins. On Maurice Farman 425, Major Trenchard 30 mins.; Engineer-Lieut. Randall 37 mins.

On Short 401, Major Gerrard, R.M.L.I., 3 mins. alone, with Lieut. Oliver 30 mins., with Leading Seaman Ashton 30 mins. On Short 402, Major Gerrard 5 mins.; Lieut. Roupell twice 10 mins.; Lieut. Glanville 10 mins.; Lieut. Bowhill 10 mins. On Henry Farman 420, Major Gerrard carrying two passengers, Air Mechanics Yorkston and McDonald, for 10 mins.; Capt. Tucker 12 and 10 mins.; Lieut. Watkins 15 mins.

R.F.C., Farnborough.—Wind SSW., 10 to 15 m.p.h., sun at intervals. On Maurice Farman 266, fitted with Claudel-Hobson carburettor, Lieut. Herbert with Mechanic Baughan 30 mins. at 3,300 ft., then without passenger 6 mins. at 1,000 ft. Mr. Cody out, and appears to have wonderful control of new machine. On B.E. with E.N.V. engine, Mr. Parr short flights. On Bréguet 211, Sergt. Hunter 7 mins., then Lieut. Shephard took over for 8 mins. at 400 ft. On Bréguet 213, Major Raleigh, Capt. Board, and Lieut. Mac-Lean each out short flights. On Bréguet 210, Capt. Beor straights. When landing down wind it appeared that wind carried him along and caused collision with No. 211 machine, slightly damaging planes of both.

Hendon.—At W. H. Ewen School, Mr. Lewis Turner out at 7.45 a.m., and after test on 35 Caudron handed over to Lieut. M. W. Noel for circuits at 300 ft. with well-judged landing. Lieut. McMullen half circuits on same, Lieut. Bayly straights. Mr. J. H. Torr on mono. No. 2 under Mr. J. H. James.

At Handley Page School, Mr. Pickles circuits on new 50-h.p.

At Deperdussin School, Mr. Spratt circuits on No. 4, testing. Mr. Valazzi three turns of two circuits each. Lieut. Hawker eight half circuits. Mr. Spratt again on No. 4.

At Blériot School, MM. Teulade and R. Desoutter out in morning.

Brooklands.—At Bristol School, Messrs. Merriam, Archer and Lane out, two latter tried for brevet, but stopped by weather.

At Ducrocq School, Mr. Ducrocq out on his biplane.

SUNDAY, February 2nd.

Hendon.—At Deperdussin School, Mr. Spratt on No. 4, but wind too puffy for school.

At Handley Page School, Mr. Pickles at 8.20 a.m. to Edgware and back, then two passenger trips later with Mr. Meredith started for Barking in 20-m.p.h. wind. Stronger wind higher and only got to Sudbury in half hour, so came back in six mins.

Brooklands.—At Vickers School, Mr. Barnwell out on No. 5 alone and later with passenger. The extra weight made very little difference, machine climbing to 1,000 ft. in less than 10 mins. with 15 to 20-mile wind blowing. Rain prevented flying in afternoon.

More Local Enthusiasm.

Sir,—I have been very keenly interested in the correspondence which you have received regarding the old machines at Brooklands, and should like to say that if there is any chance of getting one of them for a small price I should like to get into touch with their owners. I have undergone the same experience as Alec Freston, of Clapham, in trying to get a club together, having received the same discouragement, no interest, but am living in hopes of getting one or two of my friends interested sufficiently to form a club. Might I compliment Messrs. Westwood and Dawes for constructing their machine under such difficulties? They have my entire sympathy, as to talk of aviation nowadays means being thought of as a dreamer, a spendthrift, or an ass, whichever you like, no matter how much interest you take in the engineering or the mathematical side of a machine.

W. C. Gibbings.

"Woodside," Halebank, near Widnes, January 31st, 1913.

[This and many similar letters show that enthusiasm is spreading rapidly, and that if well-to-do people in the provinces would only assist by lending ground for aerodromes, and assisting financially, we might have any quantity of flying all over the country. There is, however, the great danger that young men of limited means may start experimenting with old and decrepit, or new and badly built machines, with serious results to themselves. If only Government-owned aeroplanes were available no doubt all these energetic and enthusiastic men would willingly join local Territorial aviation companies.—Ed.]

Aviation at the Ghent Exhibition.

Special provision is being made by the Belgian Government for the aeroplane industry to be adequately represented at the Ghent Exhibition this year—an exhibition which is to be run principally from the business point of view, more interest being taken in machinery than side shows. The United States, Germany and France, as well as any number of smaller countries, including Peru and Greece, are already officially represented, and are taking part in the exhibition. It is therefore of importance that the leaders of the British aeronautical world should follow closely the developments which it is expected that the Ghent Exhibition will show in aeroplanes. Further information may be had from Mr. Ernest Gelobter, 60, Hamilton Road, Golders Green, N.W.

Esperanto and Aviation.

A common basis of speech is a medium of exchange almost as necessary as money. And, in point of fact, the need of a *lingua franca* has made itself felt in all ages. Esperanto, the latest universal language, is so simple in its structure that anyone can learn to use it with a little trouble. To the aviator, who finds no frontiers in the air, and whom the "skirts of happy chance" may lead anywhere in a day's journey, Esperanto appeals as a distinct advantage. Mr. Henry Farman refers to its use as a "new and beautiful forward movement." "Esperanto," he declares, "is a necessary consequence and means of helping on aviation." Up-to-date business firms, whose clientele is international in character, have been quick to see its value. One English firm (Burroughs Wellcome and Co.), already closely identified with progress in both Esperanto and aviation, uses the new language in making announcements, and has issued a booklet entitled "La Historio pri la Malto," which furnishes an interesting means of gauging the powers of this easy, artificial speech.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. MONDAY, to ensure insertion.
For the convenience of Advertisers, replies can be received at the office of THE AEROPLANE, 166, Piccadilly, W.
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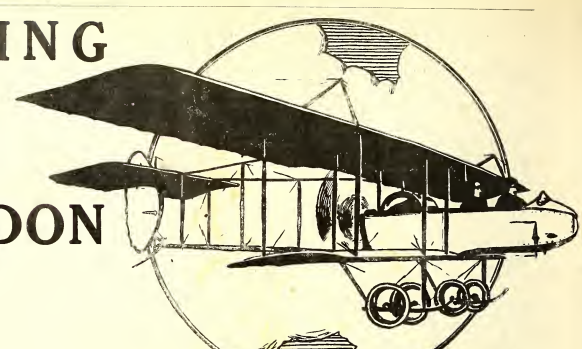
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The 4th London Aviation Meeting will be held during the EASTER HOLIDAYS, FRIDAY, MARCH 21st, to EASTER MONDAY, MARCH 24th. Speed and Altitude Competitions for Prizes will take place each day (weather permitting). Further particulars will be announced later.

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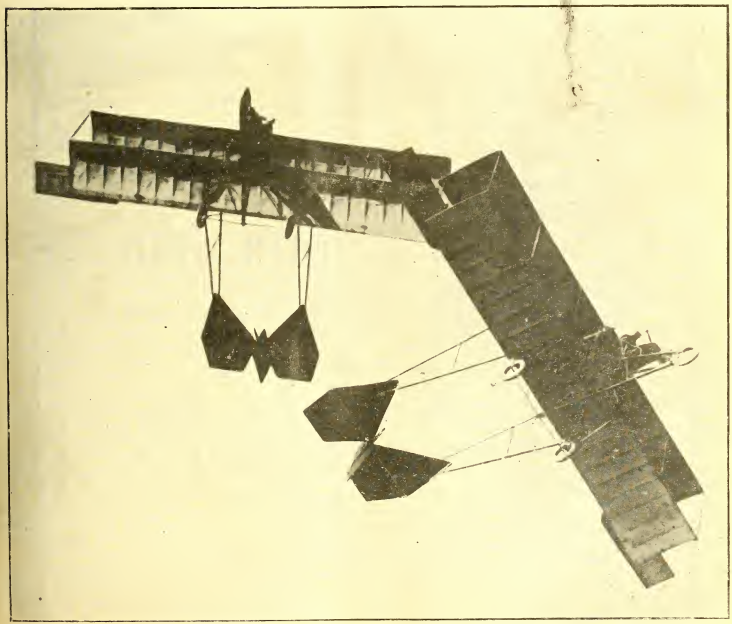
THE AEROPLANE

1D WEEKLY

Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [REGISTERED AT THE G.P.O. AS A NEWSPAPER.] THURSDAY, FEBRUARY 13, 1913. No. 7.

A DUET.



This picture should be held above the head to get the correct view. It shows Lincoln Beachey and Joseph Kearney performing what, in the picturesque American phrase, is known as "the brotherly act." The two machines descend in a close spiral, the wing of one overlapping the other, only a few feet in height separating them. Joseph Kearney, since this was taken—in the words of Mr. Noel, of "Aero and Hydro"—"took the long chance and lost."

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The Show, the Industry, and the Future.

To-morrow, Friday, the 14th inst., at 11 a.m., His Majesty the King is to visit the Aeroplane Exhibition at Olympia. This is the best thing that has happened to aviation in this country up to the present time, for the mere fact of the reigning monarch considering the show worthy of his personal attention must convince any who are still sceptical as to the future of aviation that aerial navigation is an established fact with which they must reckon.

Also, to descend to a lower level, his Majesty's personal interest in aeroplanes will set an example which will be followed by that section of the people of this country who imagine themselves to be Society, with a capital S. These are the people with money, and generally very little else; but among them are some young men with brains and initiative, who may take a practical and financial interest in flying, now that aviation is the proper thing. Hitherto the chief reason for their not taking such an interest has been simply that, in the phrase of the moment, "it isn't done." Of course, the real people, those who do things, the men who make and keep the country, have long been keenly interested. These are, primarily, the old fighting families, who supply officers to the Navy, to marching regiments, and, perhaps, some of the less wealthy officers to what are known as the "crack regiments" of the Army. These men have not the money to do all they wish to do for aviation, but they give all they have—themselves. Secondarily, the lower middle and even the lower classes take a genuine interest in flying. These are the people who do the work of the country. Mechanics, artificers of all kinds, secondary schoolboys, youths at the various polytechnics, those who live by their brains and hands, realise what aviation means to the nation.

Only the wealthy, the fat and well-fed middle class are now apathetic. True, sitting in a luxurious office planning how to sweat a few more pence a week out of underpaid shop assistants is not conducive to exalted thoughts on aerial navigation, nor does planning to induce widows and orphans to gamble in non-existent rubber plantations inspire a man to consider the behaviour of the circumambient ether, albeit the basis of his own business is equally invisible and elusive. Nevertheless, these people have money, and they have a wish to soar socially, if not bodily. Consequently, when aviation becomes fashionable they will take a hand in it, possibly as spectators at aerodromes, possibly as "fearful" passengers in hydro-aeroplanes, possibly, and most desirably, as shareholders in or financial backers of aeroplane businesses. In any case, to paraphrase the words of the famous County Council election poster, "It's their money we want." So the sooner aviation becomes fashionable the better for the country at large.

By combining the foresight and administrative ability of the governing classes, the intelligence of the working classes, and the money of the merely wealthy we should ere long be able to put British aviation on a fairly sound footing, even when compared with that of foreign countries, where firmness of Government or national enthusiasm has procured a long lead. This Aero Show should, with luck, mark the jumping-off place for a new phase in the history of flying.

The Features of the Show.

Knowing fairly well what is to be seen at the show one can indicate the chief points in which progress has been made since the last show two years ago. In the first place, the aeroplanes will demonstrate immense improvement in design and workmanship. Barring, perhaps, one or two obvious freaks, such as happily, provide comic relief at all exhibitions, whether of boots, beer, or bread, idle homes, or superfatted infants, there is practically nothing in the show which will not fly, and fly well. The idea that every machine must have flown fifty miles before coming to Olympia has been abandoned, chiefly because the weather has never tempted makers to test new and elaborate machines under conditions which might wreck even a perfect aeroplane, but that is of minor importance when the machine that does not fly well is the exception. In these days one does not ask whether a machine will fly, but how fast it will fly, how fast it will climb, and what weight it will lift.

Also, even the most ignorant visitor cannot fail to be struck by the fact that, instead of being merely a collection of stick and string, the modern aeroplane is a workshop job. The parts are properly finished; instead of rough aluminium sockets there are neat steel clips; instead of amorphous lumps of timber there are carefully built and finished struts or steel tubes; instead of the pilots being perched on a species of chicken-roost overhanging the abyss, they are cosily placed in comfortable seats inside protective bodies; control gears are as neatly made and more carefully designed than those of a motor car. Altogether, the aeroplane of to-day has obviously been

built with a purpose in every part, instead of just happening, as it did a couple of years ago. All this is to the good when introducing newcomers to the great game; nevertheless, to those who can see even a little way into the future, even those beautiful products at Olympia are a far cry from the aircraft of the future.

"Waterplanes and Warplanes."

The two great features of the show are what the daily Press will obviously call the "waterplanes and warplanes." The former may be roughly divided into flying boats, aero-hydroplanes, and hydro-aeroplanes, while the two latter will divide into classes with single and twin floats. Apparently there will be but a single flying boat, fortunately of British make, albeit with a foreign engine, so it will not afford any basis for comparison with other types. In the aero-hydroplanes—to which class the flying boat properly belongs—there is plenty of scope for argument. There are stepped hydroplanes, placed centrally, and placed apart. There are hydroplanes similarly placed, but with concave bottoms, or flat bottoms. And then there are the hydro-aeroplanes, which are simply aeroplanes with floats, which make no attempt to glide along the water, but are pulled out of it by the planes. Which is which, or how any of these floats will actually behave in water of varying roughness no one quite knows, which all adds interest to subsequent experiments.

The "warplanes" will, of course, appeal to the public more than to the average soldier, who regards the fighting aeroplane with a certain scepticism. Nevertheless, they all embody ideas which will develop, and the cheerful air-scout in the next war who fancies he can treat the lumbersome-looking warplane with contempt may quite conceivably receive a rude shock. Also those who—*vide* "Field Service Regulations"—neglect the gentle sport of bomb-dropping may find they have omitted an important part of their aerial education, and regret that they did not take more notice of a certain little episode connected with a tamdem monoplane and a mosque in Adrianople. There are possibilities in these things, and the machines shown are instructive steps towards future developments.

As to the Future.

Without being unduly optimistic, one may, at any rate, look forward to the near future with a certain amount of confidence. Recent events on the Continent, coupled with continual agitation in Parliament and in the Press at home, have, it seems, forced the hands of the Treasury, and those excellent officers at the War Office and in the Royal Flying Corps, who have been so long endeavouring to procure more machines for the Military Wing, are nearly having their way. One gathers that at the moment the department which does the actual ordering of aeroplanes is scouring the country in search of makers who can accept orders for reasonably prompt delivery of certain types at any rate. Naturally, thanks to the official policy in the past, the machines are not to be had, for, owing to lack of orders during the past year, factories are not equipped for prompt delivery. In fact, the very thing prophesied a year ago in this paper has taken place—now the country wants aeroplanes in a hurry it cannot have them. And serve it right. Fortunately we are not at war at the moment, though quite possibly we may be in a few weeks. However, there is the lesson, and if it is only "rubbed in" enough by those most concerned, it may be turned to the advantage both of the services and of the industry.

A Warning.

But "*Time Danaos et dona ferentes.*" Be careful, all you who are concerned with the industry, how these inquiries for prompt delivery are received. It is so easy for a Government department to invite tenders for delivery of a dozen machines in the next three months, and it is so natural for the maker, suddenly feeling himself in request, to reply that he is too busy to deliver more than one a month. But if he does so it is even easier for the chief of that department to represent to still higher authorities that the British aeroplane manufacturer is lacking alike in capital and enterprise, and that, therefore, it is absolutely necessary that a really big order for a regular and increasing supply of aeroplanes should be placed with the Royal Aircraft Factory. It is unfortunate that even the present request for prompt deliveries should fit in with the plan in which so many constructors believe—namely, that the industry is to be ruined for the benefit of certain Government officials.

Let those in the industry "gang warily" in this matter, and speak soft words to those in authority. Quick delivery may be given if in return a guarantee of regular orders is forthcoming. In this direction lies future success for individual firms, and for the industry as a whole.

Also, even Government officials are not all-powerful. One recollects little matters of armament and remounts in the past which were successfully investigated, and Royal Commissions can sit on other things than "wireless" contracts, and the buying of unminted silver. A little combination on the part of the industry may work wonders, if properly engineered, in the event of everything not being as it should be.

On the whole, the outlook is not too bad. The attendance at Olympia will be larger than most of us expect, if one can judge from the interest shown by people who had never even heard of an aeroplane when the last show was held. But, apart from the mere crowd, it will probably be found that purchasers from foreign countries who still believe in British workmanship will be well represented. There has been of late a remarkable increase in the demand for this paper from officers in various foreign and colonial services, and that is naturally a healthy sign for the possibilities of foreign business. One can only hope that the terms makers can offer will secure the foreign business which we in this office have done our humble best to bring to this country.

Finally, let me wish all those who have worked for the cause of aviation in this country at so great personal and financial risk "a happy issue out of all their afflictions." May the Aero Show of 1913—unlucky 1913—be the turning point of their fortunes.

C. G .G.

From slow Biplanes—



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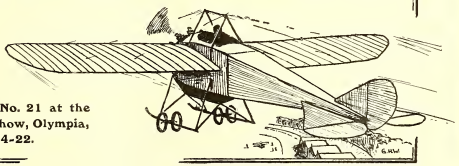
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—to fast Monoplanes

The Official View—*(contd.)*

BY W. E. de B. WHITTAKER.

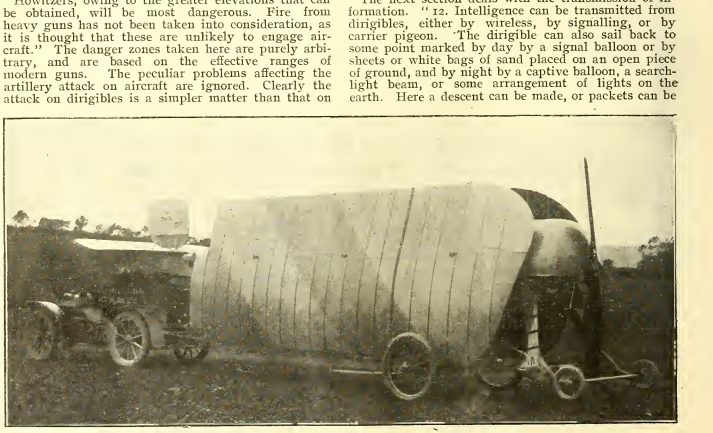
When the critics and the criticised agree it is hard to find the excuse for writing on any subject at all. Destructive criticism is the easiest and most delusive of all forms of journalism. Literature is clearly not concerned. There is no subject so sacred or so perfect in its inception and final form that it cannot be venomously attacked by ill-informed hack writers. It would be well if those who read could realise that utter condemnation is frequently an inverted form of high compliment, though its perpetrators are unaware of it. Those in positions of authority are more frequently in the right than is commonly assumed. It is impossible and impolitic for a Government department, for instance, to give detailed reasons for every step taken. Lack of such information invariably leads the ill-informed agitator to the wrong conclusion. Perhaps it is as well, else were it not so, life would be deprived of half its attraction.

Just as there are two sides to every road there are two sides to every question. This it is that excuses the quieter critics, even though they may not be right. So far as the paragraphs dealing with aerial reconnaissance in the "Field Service Regulations" there is but little scope for disagreement. It proceeds on lines which are unpleasantly styled "common-sense" by stockbrokers and journalists. This enhances its public value, but unkindly increases the difficulties of the critics.

An interesting section is that dealing with "vulnerability." The first paragraph deals with the extinction of dirigibles. It says that "Dirigibles will be exposed to danger from hostile field artillery fire when lower than 4,500 feet or within a range of 5,000 yards; and from rifle or machine-gun fire when at a height of less than 3,500 feet or at ranges under 2,000 yards." A note is appended which says that "Howitzers, owing to the greater elevations that can be obtained, will be most dangerous. Fire from heavy guns has not been taken into consideration, as it is thought that these are unlikely to engage aircraft." The danger zones taken here are purely arbitrary, and are based on the effective ranges of modern guns. The peculiar problems affecting the artillery attack on aircraft are ignored. Clearly the attack on dirigibles is a simpler matter than that on aeroplanes. The former have greater bulk and less manœuvring power. Authority recognises a difference and says that artillery fire will have but little effect at a longer range than 4,000 yards or a greater height than 4,500 feet. Aeroplanes flying at a higher altitude than 3,000 feet are presumed to be practically safe from rifle fire. These figures must be accepted for the moment, as there is no data on which to base any reasoned statement. The wastage in Service aviators is already sufficiently high without using them as targets in experiments. War itself will alone give the necessary experience.

I quote paragraph 11 in full: "High speed, frequent changes of direction and elevation, and movements in curves, and in a plane oblique to the horizontal, will in all circumstances reduce the probability that the enemy's guns and rifles will obtain hits. Cloud may also be used for purposes of concealment when approaching the enemy, or during reconnaissance. When resorting to such methods the pilot must always have before his mind, however, that to obtain and transmit accurate intelligence is the first consideration." The first part of this paragraph is liable to be misunderstood or else is inaccurate. An aeroplane is most vulnerable when making a turn, as during this operation it remains in one position for an appreciable space of time. Those who have shot at objects thrown into the air know the best moment to fire is that in which the object changes direction and starts to drop. The use of clouds as a means of concealment during a reconnaissance has the distinct disadvantage of concealing the enemy's troops also. The presence of clouds necessitates a lower altitude of flight and thus brings the aeroplane into greater danger. Safety may lie in the clouds, but information can only be gained in the open.

The next section deals with the transmission of information. "12. Intelligence can be transmitted from dirigibles, either by wireless, by signalling, or by carrier pigeon. The dirigible can also sail back to some point marked by day by a signal balloon or by sheets or white bags of sand placed on an open piece of ground, and by night by a captive balloon, a searchlight beam, or some arrangement of lights on the earth. Here a descent can be made, or packets can be



A Bristol monoplane (80-h.p. Gnome engine) in transport form.


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dropped containing written reports, marked maps, photographs, sketches, etc." This is self-explanatory and calls for no comment.

In the case of aeroplanes it is presumed that "Owing to the difficulty of conveying messages from an aeroplane by signal" the machine will return to a pre-arranged place from whence the news can be conveyed to headquarters by motor-car or other convenient means. Though at present not available, there is every reason to believe that a wireless outfit capable of attachment to any efficient aeroplane will shortly be designed. The services are at present engaged in a series of experiments which must ultimately lead to success. With the advent of an efficient wireless set the transmission of information will become simple.

A further use of the aeroplane is suggested in a separate section, *i.e.*, for the conveyance of orders or views from one portion of an army to another. Staff officers can be conveyed to and from general and other headquarters. Verbal communications can thus be made by officers of authority at times when travelling by road or rail is practically impossible.

The largest sub-section is devoted to the "Action by troops against airships." Fortified places or positions obviously held in strength should open fire on aircraft as they come within range. "Troops in the field, however, disclose their presence by opening fire," and if it is desired to avoid observation no action should be taken. It is pointed out that troops being motionless in irregular lines can escape notice even in the open.

Special observation parties of men skilled in distinguishing between friendly and hostile craft should be detailed to watch for hostile aircraft." If any are sighted all troops are then to be warned that they may take to cover in such places as woods, hedgerows and houses.

The final sentence of the entire section bears a grim message: "Before opening fire upon aircraft it is necessary to consider the possibility of damaging friendly troops."

Naval and Military Aeronautics.

GREAT BRITAIN.

From Admiralty Appointments, January 31st:—

Gunner F. Everett (T.), to "Actæon," additional, for service with Airship Section of Royal Flying Corps, to date January 30th.

From the "London Gazette" of February 7th:—

Regular Forces Royal Flying Corps, Military Wing: Lieuts. appointed Flying Officers, and to be seconded: Kenits P. Atkinson, R.A.; Jan. 11, 1913. George B. Stopford, R.A.; Jan. 13, 1913. Rutter B. Martyn, Duke of Edinburgh's (Wiltshire Regt.); Jan. 14, 1913. Dermott L. Allen, Princess Victoria's (Royal Irish Fusiliers); Jan. 15, 1913. Reginald Cholmondeley, Rifle Brigade (Prince Consort's Own); Jan. 19, 1913. Francis F. Waldron, 19th (Queen Alexandra's Own Royal) Hussars; Jan. 27, 1913. John W. Pepper, R.A.; Jan. 28, 1913.

Special Reserve of Officers Royal Flying Corps—Military Wing—Sec. Lieut. (*on* probation) Montagu R. N. Jennings resigns his commission; Feb. 8, 1913.

On February 10th Captain Darbyshire, 4th Squadron, Royal Flying Corps, started with a passenger on Army biplane 201 (B.E. type) from Aldershot with the intention of completing a stage of the flight to Montrose. When near Uxbridge the fog became dense and he lost his way. He began to descend very gradually, and finally found himself over Regent's Park. Here he attempted to land, but owing to the haze making the estimation of distances very difficult, he crashed into the ground without straightening out sufficiently. Fortunately he and his passenger escaped injury, though the front part of his biplane was seriously damaged.

The Montrose station of the Royal Flying Corps has been established on 62 acres of land at Upper Dysart, 3½ miles south of the town and quite a mile from the coast. Its height above sea level is 300 ft. Though probably a permanent station, the land has only been taken on a five years' lease. Twelve canvas hangars are erected at present.

FRANCE.

As there is considerable difficulty in finding any list of aeroplanes owned by the French Army, it may be of interest to quote the figures relating to the effective machines ready for active service in August, 1912, as shown by Jacques Mortane (editor of "L'Excelsior) in an article written for "Flying," an American monthly magazine. All school machines are excluded:—

Machines.	Centres.	Pilots.
25 M Blériot	Vincennes	10
	Etampes	19
	Pau	24
16 B Maurice Farman	Reims	4
	Versailles	40
37 B Henry Farman	Reims	30
	Camp de Chalons	30
5 B Breguet	Douai	10
5 M Nieuport	Pau	10
	Camp de Chalons	10
10 M Deperdussin	Reims	15
14 M R.E.P.	Versailles	10
2 M Sommer	Camp de Chalons	2
5 M Borel	La Vidamée	10
2 B Savary	Chartres	2
2 B Caudron	Le Crotoy	2
6 M Train	Camp de Chalons	4
8 B Voisin	Camp de Chalons	6
137		238

To these figures should be added the pilots and machines which were at the schools and centres of Verdun, Chalais Meudon, Bourges, and in the Colonies, etc.; this gives a total of about 230 military aviators in addition, and about seventy more under instruction.

I summarise from M. Mortane's article a description of a fully equipped military aviation centre—that at Reims. Eight canvas hangars are standing but are not in use, owing to their dilapidated condition. There are also four steel framed zinc sheet hangars lined with wood (50 metres by 25 metres), a dirigible shed, two canvas hangars for store purposes, and one canvas hangar for wreckage. Petrol and oil stores are close by. In two lines of buildings are contained the following offices:—Officers' ante-room, police station, telephone room, headquarter's office, workshop, fencing school, dressing room, meteorological office, wireless station, and a first aid station.

In the hangars are stored the following aeroplanes:—Sixteen Gnome engined, two-seated Henry Farman biplanes (two 50 h.p. latest type, one 70 h.p. with front elevator, ten 50 h.p. with front elevators, and three 50 h.p. old military type instructional machines), seven 50 h.p. Gnome engined Deperdussin monoplanes, five 50 h.p. Gnome engined single-seated Blériot monoplanes, two 50 h.p. Gnome engined single-seated Borel monoplanes, one 50 h.p. Gnome engined single-seated Sommer monoplane, and one 100 h.p. Gnome engined Breguet biplane. In addition there are two 70 h.p. Gnome engined two-seated Blériot monoplanes, and four 70 h.p. Gnome engined two-seated Henry Farman biplanes (demountable type).

Artillery Quartermaster Chauroux, of the Reims aviation centre, sideslipped while flying in bad weather at Noyon, and was seriously injured.

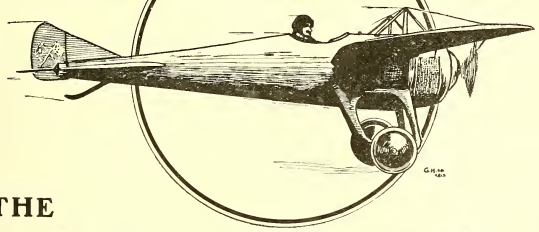
On February 4th two Maurice Farman biplanes were taken through the official reception tests at Buc in the presence of Captain Destouches.

The officer-aviators practising at the Nieuport school at Villacoublay received orders to rejoin the Reims centre. Therefore an escadrille of five Nieuport monoplanes, piloted by Lieutenant-aviators Montjou and de Villepin, Quartermasters

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Bauwens and Hurtard and Sergeant de Marmier, all accompanied by passengers, started from Villacoublay to Reims, where, with the exception of Quartermaster Bauwens, whose engine failed near Ferté-sous-Jouarre, they all arrived after a flight of 1 hour 10 minutes.

On February 6th, at Buc, M. Perryon took eight single-seated Blériot monoplanes through the official reception tests in the presence of Captain Destouches.

The sum of £600 colected by "L'Eclaireur de Nice" for the national aviation subscription, has been allocated by the Comité National de l'Aviation Militaire, to the purchase of a two-seated Brégueт biplane (70-h.p. Renault engine), which will be named "Alpes-Maritimes," and will be attached to the Douai centre.

General Goetschy, commanding 20th Army corps, has decided that the escadrilles of Nancy and Toul shall take part only in the manœuvres of a brigade or more and that no officers unaccustomed to aviation shall be carried as observers. He leaves the officers commanding escadrilles to decide how for they will participate in manœuvres, and in no case will he interfere with the orders of their aeronautical superiors.

For some time past there has been a series of attempts to pierce the line of sentries at the Nancy aviation centre. The presumption, readily accepted by the French people, is that the culprits are Germans, and that their desire is to damage the military aeroplanes that death may be the result. On the night of February 7th two people tried to pass the lines. The sentries had been doubled unknown to the outside world. One of the two sentries at the threatened point ran towards the guardroom, the second firing into the air. The two spies then fired at him, wounding him in the thigh. Help arrived too late, and the Germans escaped.—W.

GERMANY.

The allowance made in the 1913 Budget for aeronautics is rumoured to be £1,000,000.

The new "Parseval" dirigible P.8, piloted by Lieutenant Stelling, left Bitterfeld on February 7 at 5 a.m. with the intention of making a test flight of 12 hours. It had on board the Military Reception Committee. I have no further details of its voyage.—W.

A sad accident, which cost the life of two aviators, occurred in the Baltic on February 7th, when Senior Lieutenant Jenetzki, of the new German aviation station at Putzig, near Danzig and First Mate Dickmann who intended to fly to Stolp a neighbouring town, met with their deaths. As the wind was very strong, the machine was turned back for port and effected a landing at Danzig; at about four o'clock they ascended to return to the Putzig base, but midway a plane of the apparatus suddenly broke and the machine and both men fell into the bay and were immediately drowned. The aeroplane was the "Westpreussen," presented to the German Admiralty by a subscription opened in that province.

A new military aviation station is to be erected at Hanover in the autumn, 50 officers and 300 men forming its standing detachment. The city of Hanover will build the barracks and hangars at its own expense, the army taking over the tenancy.—B.

AUSTRIA.

The Ministry of War has approached the German Government for permission to order several Zeppelin dirigible balloons in Germany. It is rumoured that the reply is favourable.—W.

SPAIN.

On February 7th, H.C.M. King Alphonso XIII, accompanied by Colonel Vives and Captain Kirdirlan, made an ascent on the dirigible "Espana." His flight lasted ten minutes at a height of 700 feet.—W.

GREECE.

Lieut. Matoussis, accompanied by Ensign Moraitini, of the Greek Navy, flew on a Maurice Farman biplane on February 7th over the Turkish fleet at anchor in the Dardanelles by Nagara. His place of departure was the Isle of Lemnos, and his average height throughout the flight was 4,500 ft. He described two circles over the fleet and dropped four bombs, none of which took effect. The Turkish artillery opened an ineffectual fire on his machine.—W.

SERVIA.

M. Jules Védrines has this week travelled to Servia and has had an interview with the President of the Council. As a consequence he has been asked to make a report on the formation of a Servian Air Corps.

M. Agafamoff flew on a R.E.P. monoplane (50-h.p. Gnome) under orders from Nisch to Belgrade on February 5th. This flight was the more praiseworthy as the wind was high throughout.—W.

AMERICA.

Still another U.S. army aviation camp has been established. The new camp is situated at Palm Beach, Florida. The work here will be concerned mainly with hydro-aeroplanes.

FOREIGN NOTES.

France.

M. Deutsch de la Meurthe, who by his open-handed generosity has done so much to assist the investigations of the aeronautical science, was recently graded a Commander of the Legion of Honour. On February 2nd, in honour of this, he was fêted by the Aero Club de France at the Washington Palace. Speeches of considerable length, graceful and delicate as the language of France alone can be, were delivered with emphatic gesture. Sincerity was the keynote, and the hours of the evening dissolved in happiness.

On February 6th M. Henri Deutsch de la Meurthe was elected president of the Aero Club de France in the place of M. Cailletet, deceased. None has done more for the good of aviation than has M. Deutsch, and it is a right thing that the Aero Club should thus recognise him.

Louis Gibert, the well-known aviator, is amusing himself these dull days by experimenting with an aviette of his own design.



The Blériot hydro-monoplane in flight over the Seine.

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M. Guillaux, interested in journalism, on February 6th took M. Max Bruyère, of "L'Aero," as passenger on his Clement Bayard monoplane in a flight round the Eiffel Tower and over the Place de l'Etoile.

M. Prevost has recently made some excellent flights on a two-seated Deperdussin monoplane (80-h.p. Gnome-engined) on the military aerodrome near Madrid. He took the following as passengers in turn :—H.R.H. the Infante Alfonso, Colonel Vives (com. military aeronautical troops), Captain Kinderlan, M. Mauvais, and M. Rossignol. He went through all the tests imposed by the Spanish army before the selection of any aeroplane is approved.

M. Pierre Gougenheim, flying a Henry Farman biplane (80-h.p. Gnome) at Etampes on February 8th, rose to a height of 750 metres (2,470 ft.) accompanied by four passengers. This constitutes a world's height record with four passengers. He left ground at 7.10 a.m., reached his greatest height at 8.5 a.m. The rain began to fall and stopped any further attempt. He landed ten minutes later.

M. Garros and M. Audemars are now at Nice preparing to make an attempt on the height record with passenger on a Morane Saulnier monoplane.

Messrs. René and Gaston Caudron are the first to qualify for the new hydro-aeroplane aviator's certificate recently founded by the F.A.I. They made the necessary test flights on February 5th.

At three o'clock in the afternoon of February 4th M. Gastinger and M. Guillaux flew on Clement Bayard monoplanes over the boulevards of Paris.

Germany.

Flying took place on twenty-five days at Berlin-Johannisthal during the month of January, when forty-seven men made 824 ascents, totalling 101 hours and 11 mins. Stiploschek was the most active pilot with thirty-one ascents, lasting 9 hours and 17 mins. in all.

The new Fokker Hydro-aeroplane is now completed and ready to be taken out for a series of tests as soon as climatic conditions permit. Fokker has built a biplane somewhat larger than usual with a boat of about ten metres in length. The upper plane, which is V-shaped, is on a level with the 70-h.p. Renault motor.

An interesting wedding took place in Berlin just recently when Miss Melli Beese, the well-known pilot and constructress, was married to M. Charles Boutard, chief pilot at the Beese Aviation School and Works.—B.

Herr Wiencziers, once a motor-cyclist and later the pilot of a German-built Antoinette monoplane fitted with a Gnome engine, has now met his deserts in a German court of law. Accused of fraudulent bankruptcy and perjury, he has been sentenced to thirty months' imprisonment. Love has been unkind to him. Celestial heights produced celestial thoughts, and in a gilded moment he espoused the daughter of Herr Mayer, a banker of great wealth resident in Leipzig. The marriage took place in London under conditions of secrecy. Herr Mayer, infuriated that an aviator should steal his most valued treasure (or so Romance would have it), instituted proceedings against him of the flighty instincts, and Nemesis on the wing has swiftly overcome the sinner.

The German Ministry of Marine has issued a series of regulations for the next hydro-aeroplane competition to be held on German shores. All machines entered must be two-seaters. Two passengers are to be carried, weighing, with the pilot, 419 lbs. Fuel for four hours and a half must be carried. Minimum speed to be 62 miles an hour. It must alight on disturbed water, and on one occasion it must float with motor stopped for one and a half hours. A continuous flight of three and a half hours must be carried out. Both passengers must be in a position to control the machine if necessary. This competition will not take place if the entries are few.

Herr Faller flew on February 1st at Strassburg for 2 hours 30 mins. exactly, carrying three passengers (total weight of pilot and passengers, 4 cwt. 47 lbs.). This is a world's record.

Austria.

Austria is taking striking precautionary measures against aerial vessels crossing certain stretches of its territory; in fact, the Home Office has closed up nearly all the country against "luftfahrzeuge," as the somewhat ambiguously worded decree of January 20th, 1913, has it. It is an open question whether the regulation concerns flying machines or is restricted solely to dirigibles. The forbidden zones are (1) the whole of Gallicia; (2) the whole Bukovina; (3) all East Silesia; (4) the Tyrol, from the Swiss and Italian frontiers to Caeruthen, the Etsch Valley (to the mouth of the Eisack), the bed of the Eisack, until Frauzensfeste, and the railway line Frauzensfeste-Toblach; (5) the frontier territories in Caeruthen; (6) the frontier territories of Goerz and adjoining waters; (7) the City of Trieste and all its territories and waters under Austrian rule; (8) the frontier territories of Istria and all waters and islands; and (9) the whole of Dalmatia, with its waters and islands.

The entire frontier facing Russia in the north and east, and Italy in the south, and the entire Adriatic coast, are now enclosed by these laws, which render the greater part of the Austrian Empire impassable to aircraft. The innermost provinces alone have not been touched by the decree.—B.

Italy.

Italy is said to be building an aerial Dreadnought, the largest dirigible yet constructed. Its capacity is to be 25,000 cubic metres, with two motors capable of developing 1,000 h.p. and attaining a speed of 100 kilometres per hour. The vessel is to be heavily armed with aerial torpedos and guns.—B.

Russia.

M. Lazareff, a Russian of great wealth, has offered a prize of £10,000 for a flight from Petersburg to Moscow and back. Five Russian aviators have announced their intention of entering the competition.

New Military Orders.

In view of the scarcity of machines in the Royal Flying Corps, it is interesting to learn that orders have now been issued to independent constructors for twelve more biplanes of the "B.E." type. Seven of these have been ordered from the Bristol Company, who have been the first to deliver machines of this type to the War Office, and five from Vickers, Ltd. The firms are to be congratulated on the new orders, and one gathers that the first deliveries perform extremely well.

The Bristol Company have also received from the Admiralty an order for one of their previous type school biplanes with 70-h.p. Gnome engine, this machine being intended for the Naval School at Eastchurch. In addition to this the Spanish Government has just placed a large order with the same firm for one of the new type Bristol military tractor biplanes similar to those illustrated and described in THE AEROPLANE some time ago. It will be remembered that this type of tractor machine is particularly taking in appearance, and the Spanish order shows that the authorities in that country know a good thing when they see it.

A Fine Cody Performance.

The second Cody biplane just accepted for the Royal Flying Corps by the Royal Aircraft Factory gives another excellent example of Mr. Cody's habit of always being rather better than his word. The machine, in flying order, weighs 2,484 lbs., and with instruments, etc., it was brought up to 2,500 lbs. Of this 500 lbs. had to be "useful" load, made up of pilot, passenger, fuel, and ballast.

The sand test on the wings, with the machine inverted, is generally three times the flying weight, but this machine was loaded up to 7,000 lbs., which one gathers, used up all the available sand in the factory, plus some of the balloon ballast. With this weight on the wings, one of the main wires was cut, as is customary, but no ill effect resulted. When the sand was unloaded and the machine put right side up again, Mr. Cody flew it round Laffan's Plain and back to the Factory, the cut wire still being left out of action. Despite the test and the missing wire the machine flew as well as ever.

The flying performance of the machine is worthy of special attention. The conditions of accptance stipulated that its low speed should be 48 miles per hour. Mr. Cody cut down to a little over 47 without trouble. The high speed had to be 65 miles per hour, but it did 69. It had to climb 1,000 feet in 3 1-3 minutes—300 feet per minute, but it reached 1,200 feet in 33 minutes. All this was done without special tuning up, and without forcing the machine at all, so its best possible performance would evidently far exceed the official requirements.

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The Montrose Flight.

The adventure of Captain Darbyshire in Regent's Park on Monday last may well serve as a warning to those who are responsible for the idea of flying to Montrose from Farnborough at this time of the year. For the next month or two weather conditions are absolutely unreliable, and one cannot agree with the wisdom of permitting officers whose cross-country experience has been deliberately limited by orders confining their flight to the regular highway between Farnborough and Salisbury Plain to attempt a big flight not only over absolutely unknown country but into a totally different climate.

Even here in the South at this time of the year a calm means a fog, and a fine day means a big wind. A comparison of the weather reports in the "Week's Work" columns during the past few weeks will show that often when there has been a full day's flying at Farnborough in a steady wind there has been on Salisbury Plain a gale from quite a different direction, often with snow or heavy rain, which has prevented even the hardiest of pilots at the Central Flying School and at the Bristol School from venturing out, or vice versa.

When the apparently fine weather comes the conditions are even more dangerous, for an apparently still, bright day brings most inexplicable phenomena owing to the effect of the sun's heat and possibly of its light, on the cold and rain-sodden ground.

Almost a year ago, on the day of Mr. D. G. Gilmour's fatal accident at Richmond, several aviators found that the air at Hendon, Shoreham, and Eastbourne on that day was of very uncertain quality and experienced some extraordinary currents. Writing shortly afterwards Mr. W. H. Ewen, who is one of the most observant of the men at present flying in this country, said: "Here is some information which takes one back to the day of poor Gilmour's smash. On Wednesday, Salmet, Hucks and myself were flying over totally different parts of the country outside the aerodrome, and Turner was flying about the aerodrome. In comparing notes afterwards, we all expressed the opinion that the air was as tricky as, or more so than, on any previous occasion in our experience. Now I have just heard that René Caudron, who was flying on the same day at Crotoy, formed the same opinion. This is now the second time I have had a somewhat similar experience, only this time the area covered is much greater. Are we to put this down, as on the last occasion, to mere coincidence, or is it possible to assume that the atmosphere over such a large area can be regularly good or bad? I leave you to your thoughts.

"Then, again, what think you of this suggestion? We are now really beginning the day of decently long cross-country flights, and soon we will all want to know the best way from and to various places. Would it not be a good plan to keep, say, a log-book, so that the men who first go over what will later on be recognised air-routes, might report any special circumstances which might be a benefit to future fliers?"

The first paragraph of Mr. Ewen's letter deserves the very careful consideration of the Royal Meteorological Society, and it is to be hoped that when the Royal Flying Corps gets to work and various officers are flying all over the country, very careful observations will be made to investigate this quality of "trickiness" in the air. Even now the Aeronautical Society might do much to collate the experiences of various aviators on various days when unusual conditions prevail.

The second paragraph is also of very great importance, and it would be most useful if cross-country fliers could be induced to put on paper any circumstances surrounding any particular flight which might be of use to others following the same line. For instance, notes as to any bad ground which may be avoided by a deviation from the direct line, any good landing places noticed in passing, any bad currents from certain hills or valleys, and so forth, should be placed on record. Such matters will be part of the regular work of the Royal Flying Corps, but civilian aviators who think of joining the Reserve should make a practice of doing so also. The Aeroplane will always be most willing to publish such observations.

One could wish that those controlling the Royal Flying Corps would have the moral courage to admit that the idea of flying to Montrose was a mistake from its inception. It could only be possible in the event of a steady and uniform frost covering the whole of the country, and even then there would probably be too much fog.

Scare-ship Effects.

The visits of the various "scare-ships" have evidently not been without salutary effect. Colonel Seely, Secretary of State for War, has drafted a Bill to amend the Aerial Navigation Act, which has for its object the restriction, if necessary, of flights by foreign aircraft over this country. The text of the Bill was published on Monday.

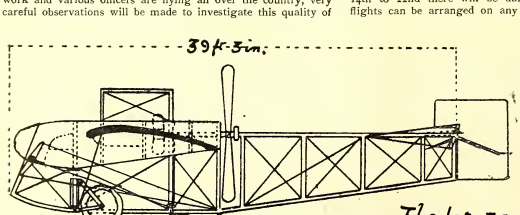
The Bill gives a Secretary of State powers to prohibit the flying of aircraft over proscribed areas, which may include the whole of the coast-line and the "territorial waters (i.e., within three miles of the coast) adjacent thereto."

If an aircraft flies over a proscribed area, or fails to comply with the landing regulations, a signal shall be given by "the officer designated for the purpose." If the aircraft still fails to comply "it shall be lawful for the officer to fire at or into such aircraft and to use any and every other means necessary to compel compliance."

It will be remembered that similar laws have been in force in Germany, France, Russia, and Austria, for some time, so that Great Britain occupies its accustomed place in matters aerial.

The Aero-Show Trophy Race.

Given fine weather there will be keen competition for the first big race of the season at Hendon, Saturday week, February 22nd. The entries close on Saturday next, the 15th. at noon, so pilots who are thinking of competing should make up their minds quickly. The first heat of the race is timed to start at 3 p.m., and the second at 3.20 p.m., and as the heats always show as good sport as the finals, visitors should be in good time. After the heats there will be an exhibition of fancy flying by Mr. Grahame-White and other well-known pilots, and the final of the race for the Aero-Show Trophy will start at 4.15 p.m., after which there will be more exhibition flying and passenger carrying. Throughout the Show from February 14th to 22nd there will be daily exhibitions, and passenger flights can be arranged on any day.



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The Royal Aero Club.

The annual dinner will take place at the Royal Automobile Club, Pall Mall, S.W. (by kind permission), on Thursday, March 13th (instead of March 6th), 1913, at 7.30 for 8 o'clock. Tickets (exclusive of wines and cigars), 15s. each.

The following prizes won during the year will be presented: The British Empire Michelin Trophy No. 1, to H. G. Hawker; the British Empire Michelin Trophy No. 2, to S. F. Cody.

At the committee meeting on the 4th inst., the following aviators' certificates were granted: 409, Horace A. Buss (Blackburn monoplane, Blackburn School, Hendon); 410, Montague F. Glew (Blackburn monoplane, Blackburn School, Hendon); 411, Hubert Scott (Deperdussin monoplane, Deperdussin School, Hendon); 412, Air Mechanic Reginald Collis (Maurice Farman biplane, Central Flying School, Upavon); 413, Christopher Nevile (Bristol biplane, Bristol School, Brooklands); 414, Capt. E. G. R. Lithgow, R.A.M.C. (Short biplane, Central Flying School, Upavon).

The Kite and Model Aeroplane Association.

Death of the President.—It is with great regret that the secretary announces the death of the president, Colonel F. C. Trollope (late Grenadier Guards), who died on Tuesday, January 28th, from pneumonia. He attended a council meeting of the association on Thursday, Jan. 23rd, when the council presented him with a small memento for the work he had done during his term of office. There is no doubt that he caught a chill on his way home from the meeting, for he never went out again.

He was buried by the wish of Lord Kesteven in the family vault at Tallington Church, Stamford, on Saturday, February 1st. Lieut. T. O'B. Hubbard, Royal Flying Corps, represented the association. Colonel H. S. Massy, C.B., and Colonel J. Templer, late Superintendent Government Balloon Factory, represented the association at a memorial service held at St. Thomas's, Orchard Street, W.

Colonel Trollope will ever be remembered for his work in connection with balloons and kites, as well as the work he has done in raising the War Kite Squadron, which he did not live to see equipped with their outfit, but it was his last wish to see the 1st squadron complete. It would therefore be a fitting memorial to him if his friends would fulfill his wish by subscribing towards a section of the squadron and name it after him. This is the memorial he himself would have liked.

His kindly presence and his valuable help will be greatly missed. The council and members of the Association tender their sympathy to their late president's relations and friends in the loss they have sustained.

Aero Show.—The entries received number about 170 and show that the Model Section will be the finest model exhibit yet seen in the world. It includes French and Chinese entries, and the exhibition will be worth visiting, if only to see this section, which will show the scientific use of models. It is the object of the Association to prove to the public that models are useful besides simply forming a pastime and sport only.

Annual General Meeting.—This will not be held till March, but the hon. sec. will be pleased to receive all notices of motion before February 22nd, together with any nominations for the various offices.

Presentation to the President.—The Council on Thursday, January 23rd, presented Lieut.-Col. F. C. Trollope with a cigar cabinet as a slight token of esteem for the kindness and courtesy extended to them and the members of the Association during the year.

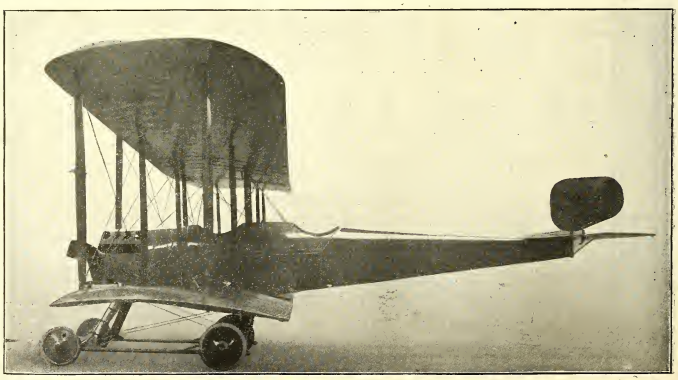
Official Trials.—The Paddington and District Aero Club have invited the Association to hold the next Trials in March on their ground at Sudbury. This offer has been accepted with thanks, the date fixed being March 15th, at 3 p.m.

The Edinburgh Aeronautical Society.

A meeting was held on Friday, February 7th. Members have the following advantages: Use of excellent aeronautical library and free access to reading room at the Rutland Hotel, where all the aeronautical papers may be seen. The society has also been lent the use of a 30-h.p. biplane for the summer. Free advice on any aeronautical subject may be obtained free from our technical advisers, which include A. V. Roe, and W. H. Ewen, Esqs. The society has also made arrangements with an aeronautical firm whereby members wishing to enter the aeronautical trade as aviators, mechanics, designers, etc., may do so to their advantage. Full particulars from G. T. Cooper, hon. secretary, 41, Drumsheugh Gardens, Edinburgh.

A Sign of the Times.

A meeting of the British and Colonial Aeroplane Company, Limited, the makers of the "Bristol" aeroplanes, was held at Bristol on February 10th, Sir George White, Bart., presiding. A resolution was unapimously adopted increasing the



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capital from £100,000, which has already been fully paid up, to £250,000 in order to cope with developments at home and abroad which the demand for "Bristols," particularly by foreign Governments necessitates.

This is a sign of the times, for Sir George White is generally regarded as one of the shrewdest business men in this country, and the fact that he should sanction such a large increase of capital may be taken as proof that he and the managers of the Bristol Company now see clearly that money spent on aeroplanes will bring back a business return.

That "money talks" is nowhere more true than in the manufacture of weapons of war, where enormous capital is needed for experimental purposes as well as for actual manufacturing. This increase of capital by the Bristol Company shows that the firm is determined to hold that position as a provider of international armament which its persistent efforts have won for it.

Another Sopwith Success.

The success of the two first tractor biplanes turned out by the Sopwith Aviation Co. has been followed by a still better first performance by the 80-h.p. biplane which will be shown at Olympia. This machine was built for the Admiralty, who required that she should be a faster machine than the one first supplied, which is so popular with the naval aviators at Eastchurch. She was finished last week, and taken to Brooklands for a test flight prior to going to Olympia. Mr. Sopwith himself took her out for the first time in a puffy wind, with Mr. Harry Hawker as passenger, the machine being fitted with a very accurate air-speed indicator.

At about forty miles an hour she lifted and flew easily. Then Mr. Sopwith got the 80-h.p. Gnome going all out and she ran the speed indicator right up to its limit of 73 miles an hour, where it stopped, though the machine apparently accelerated somewhat more. Allowing for possible errors in the indicator it would appear that she has a top speed of something over 70 m.p.h., with a landing speed of about 35 m.p.h., which must be the biggest range of speed yet attained.

So well balanced was the machine and so free is she from vibration that Mr Sopwith, who is one of the most cautious of pilots when testing a new machine, took her straight up to 300 feet the first time off the ground, showing how comfortable she must have felt to his experienced hand.

Another extraordinary point about her, which reflects great credit on Mr. Sopwith and the staff of the Sopwith works, is that she was designed to weigh 1,000 lbs., and when finished and weighed complete she came to 1,008 lbs. Work of this sort should assure plenty of orders both here and abroad, and it is a happy omen for the future of the Bat-boat also.

A British Enterprise in Italy.

Mr. D. Lawrence Santoni has just returned from Italy, where he has established not only an Italian Deperdussin firm, but also an Italian branch of the General Aviation Contractors, under the title of Agenzia Generale Forniture Aeronautiche. He would be glad to hear at the firm's London address, 30, Regent Street, S.W., from any British firm who wishes to fix up an Italian representation.

"The Aeroplane" at Olympia.

The stand of The Aeroplane at Olympia will be found next to the Post Office in the left-hand corner of the hall on entering from Addison Road. All readers of this paper will be welcome there, and are invited to use the stand for the purpose of making appointments. Letters can be addressed there to be called for. There will be a stock of interesting aeronautical literature of various kinds for sale, and on the stand will be displayed a number of photographs of various interesting aeroplanes and of important events of the past year. Orders for copies of these photographs may be placed with the stand attendants.

"Lighter Than Air."

Most readers of The Aeroplane will remember the hilariously funny "Air Currents" which used to appear over the letters "H. M. M." These are the initials of Mr. Harry Maitland, late of the Essex Regiment, at one time a promising pilot, who broke both his legs flying on Salisbury Plain. Mr. Maitland has now published a book entitled "Lighter than Air—or the Aviators Guyed," which is quite the most amusing thing aviation has yet produced. Even to those who know nothing of flying it is funny enough, but to those who are even a little on the inside of things it will appeal as a highly diverting satire on the weaknesses of various people who have made a name in connection with flying, though not necessarily fliers themselves. The purely imaginary visits to well-known aerodromes are capital pieces of description, while the articles on "How to Build an Aeroplane at Home," "The Hendon-Honolulu Race," and "A Day in the Great War of 1919," display an inventive genius which might almost have been put to a good use.

The numerous illustrations by Mr. C. H. Allen add considerably to the entertainment, and, if some of them are perilously near being caricatures, they never display ill-feeling, while they show considerable intimacy with the manners and customs of "cloud-men," as the author calls them.

The book will be on sale at The Aeroplane stand at Olympia, price 1s., or it may be had from this office post free for 1s. 3d. As it contains enough material to keep the reader busy laughing for several days it would be cheap at five times the price.

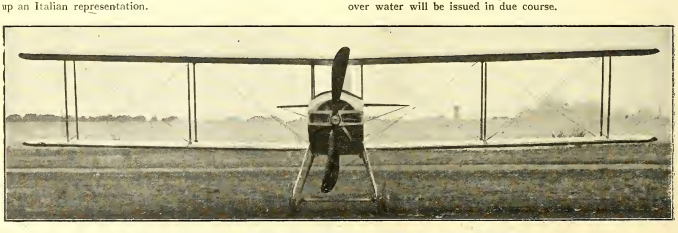
Hydro-aeroplane Certificates.

The F.A.I. has decided that the ordinary Aviators' Certificates should be valid for flights over both land and water.

It was further decided that certificates should be granted in respect of tests made over the water, but that such certificates should not be valid for flights over land. It will therefore be seen that it is not necessary for the holders of the F.A.I. aviator's certificate to obtain a water certificate.

In the case, however, of aviators who have passed the water tests only, their certificates will be endorsed accordingly, and do not imply qualification for land flights. The holder of a certificate so endorsed can have it converted into a full F.A.I. Aviator's Certificate, on carrying out the landing tests at present in force.

The full regulations dealing with the tests to be carried out over water will be issued in due course.



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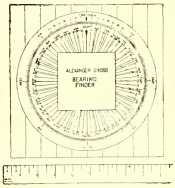


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The Late Capt. R. F. Scott, R.N.

Capt. Robert Scott, R.N., who has died with his little band of explorers on their return from the South Pole, was one of those keen and thoughtful officers who fully realised the importance of aviation to the Navy. In August, 1909, Captain Scott was present at the great Reims aviation meeting, and on his return sent in a report to the Admiralty presaging future developments in aerial navigation. This report is probably the first official document in the possession of the Navy dealing with actual flying from a naval officer's point of view, and it is well to place the fact on record so that when our aerial fleet attains the strength its importance demands it may be remembered that Robert Scott, the hero and the victim of the South Pole, played a not unimportant part in its foundation.

Mrs. Scott, who will only learn of her bereavement on approaching New Zealand, is herself greatly interested in aviation, and has done a great deal of flying as passenger with various pilots of note, both in this country, in France, and in Germany. A regular and enthusiastic visitor to the various flying grounds, she has a large number of friends among all ranks and classes of those concerned with aviation, and on their behalf the writer extends to her and her son Peter the deepest sympathy in their irreparable loss.

The Public Safety and Accidents Investigation Committee.

Report on the Fatal Accident to Mr. L. F. Macdonald and Mr. Harry England when Flying over the River Thames near Purfleet, on Monday, January 13th, 1913.

Mr. L. F. Macdonald, with Mr. Harry England, a mechanic, flying on a Vickers biplane, fitted with a 70-h.p. Gnome engine, was making a trial flight from the Vickers' trial ground, near Erith, on Monday, January 13th, 1913, at 3.30 p.m. After leaving the ground the aircraft headed towards the river, which is situated about 1,300 yards from the starting place. The aircraft went partly across the river, turned to the left, and descended slowly on to the water. The aircraft sank, and both men were drowned.

From the consideration of this evidence the Committee regards the following facts as clearly established :—

(1) The aircraft was built in December, 1912.

(2) There was practically no wind at the time of the accident.

(3) The flight lasted less than three minutes, during the latter part of which aircraft was flying slowly.

(4) When over the river, which at this point is about half a mile wide, and within 200 yards of the opposite shore, the aircraft, after turning to the left, went a hundred yards or so up the river, descending slowly.

(5) The aircraft rose momentarily when over the middle of the river.

(6) When the aircraft alighted on the water the engine was running, and the propeller broke on touching the water.

(7) After alighting, the aircraft sank gradually, not being designed to float. It took about two minutes to disappear.

(8) The quick release belts supplied by the firm were used by both men.

(9) One man sank with the aircraft and the other sank close to it.

Opinion : The Committee is of opinion that the accident was primarily due to a flight at a low altitude over the river being attempted when the engine was not working properly. Whilst crossing the river, and on turning, the pilot was unable to prevent the aircraft from descending gradually on to the water.

Recommendation : The risk that is run by a pilot in persevering in a flight with a faulty engine has already been drawn attention to in the Committee's report on the fatal accident to Lieut. Parke, R.N., at Wembley, on December 15th, 1912, and this further accident adds additional emphasis to the danger. This flight, in that it was effected over water at a low altitude, demanded additional precaution.

When flights over water are habitually attempted, precautionary measures should always be taken, either the aircraft itself should be capable of floating for a reasonable time, or, alternatively, the men should wear, or have available, some appliance for keeping them afloat until rescued.

The Federation Aeronautique Internationale.

An extraordinary conference of the Fédération was held in Paris on January 28th and 29th, 1913. Delegates from all countries affiliated to the Fédération were present, the Royal Aero Club being represented by Mr. Griffith Brewer and Mr. H. E. Perrin.

The Gordon-Bennett Aviation Cup.

The F.A.I. has decided that the G.B. race for this year, in France, should be for a distance of 200 kilometres over a course of not less than 5 kilometres. The Aero Club of France, who will organise the race, informed the Fédération that it hoped to arrange a course of at least 10 kilometres.

It will be noticed that the Committee of the Royal Aero Club are inviting entries for the Gordon-Bennett Race which takes place this year in France, and would-be competitors are asked to pay a £20 entry fee on or before February 25th, in order that a challenge from the British club may be sent in before March 1st. One would like to suggest that a more acceptable method of procedure would be for the club to send in the challenge and the entry fees on its own account, and nominate its representatives at a later period. There may be a number of suitable machines turned out in the course of the next few months, and new pilots capable of flying them may materialise. Also both constructors and aviators who do not at the present moment feel inclined to speculate £20 on an entry fee, may, before the race, being a position to do so. In a matter of national interest of this kind all the responsibility should not be put on private enterprise.

The First Aviator Politician.

The credit of being the first aviator to take to politics belongs to Mr. E. V. Sassoon, who took his certificate under the name of "E. V. Smith." Mr Sassoon is, in partnership with Viscount Peel, fighting Sir John Benn and Mr. Richardson for the representation of Kennington in the London County Council. Lord Peel, who is, perhaps, better known as "Willie" Peel, the leader of the Municipal Reform Party in the L.C.C. from 1907 to 1910, entered Parliament in the latter year as Member for Taunton. Having succeeded to the peerage, and finding that there was not enough for him to do in the Lords, he is now going back to the L.C.C., where he and Mr. Sassoon, if they both have the good fortune to win their seats, ought to enliven the deliberations of that assembly considerably.

This is not a political paper, and the respective merits of Municipal Reformers and Progressives are equally indifferent to the writer, but for the sake of his aviatic past it is hoped that any reader of The Aeroplane who can spare cars to convey voters to the polls on March 6th will assist Mr. Sassoon. One hopes that the votes in his favour at the election will soar as high as ever he did in an aeroplane, and that he may land in the London County Council Chamber as happily as ever he did in an aerodrome. Those willing to assist him with the loan of cars are requested to write to the Editor of The Aeroplane, 166, Piccadilly, London, W.

Enterprise in the North.

The Robert Sinclair Tobacco Co., Ltd., of Newcastle-upon-Tyne, in order to introduce a new tobacco, known as "Mica" mixture, have arranged with Mr. B. C. Hucks, the well-known aviator, to deliver a supply of this tobacco in special souvenir tins to the following villages near Newcastle : Seaham Harbour, Ashington, Consett, Blyth, Pelton and Stanley, one village being visited each day, starting on Monday, February 10th.

Mr. Hucks will give an exhibition at each village, and also exhibitions each afternoon at Gosforth Park, Newcastle, weather permitting.

The arrangements have been made by Mr. Norman Sinclair, assisted by Mr. Brian M. Dodds, of L. Howard Flanders, Ltd., the well-known constructors. Given fine weather these flights will not only be an excellent advertisement for Messrs. Robert Sinclair, but will also arouse interest in aviation in the north of England, where flying is still practically unknown.

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The Report of he Committee on Monoplanes.

In a moment of panic, following on two serious and unforeseen accidents to monoplanes, the Secretary of State for War ordained that a Committee should sit to hear evidence and come to some conclusion as to the comparative safety of the single-decked aeroplane. Whatever may have been the cause, the formation of such a deliberative body might do good and could do no harm. The collection and codification of expert opinion is always of value, and tends to direct thought into unwonted channels. The Committee on whose report I propose to comment has proved that monoplanes are no less strong in construction than biplanes, so far as the evidence reads.

The Committee was composed as follows:—Dr. R. T. Glazebrook, C.B., F.R.S. (chairman), A. E. Berriman, Esq., Major H. R. M. Brooke-Popham, Lieutenant Spenser D. A. Grey, R.N., Brigadier-General David Henderson, C.B., D.S.O., F. W. Lanchester, Esq., M.Inst.C.E., Mervyn O'Gorman, Esq., Professor J. E. Petavel, F.R.S., Major F. H. Sykes. Mr. F. J. Selby acted as secretary.

The Committee was formed in October, 1912, "To inquire into and report upon the causes of the recent accidents to monoplanes of the Royal Flying Corps and upon the steps, if any, that should be taken to minimise the risk of flying this class of aeroplane."

The Graveley and Wolvercote fatal accidents were discussed, as also was an accident to Major Gerard, R.M.L.I., while flying a Nieuport monoplane. Witnesses—in some cases eye-witnesses—were examined and evidence taken. Monoplanes in the possession of the Royal Flying Corps were inspected at Lark Hill, and the experts of interested companies were asked to appear and give evidence. A large mass of material was condensed into the report now issued.

The decisions of the Royal Aero Club Accidents Committee as to the causes of the two fatal accidents were accepted after examination by the Monoplane Committee.

In the case of the Deperdussin it is assumed that some part of the engine, probably a tappet rod, fractured and swung a valve rocker against the cowl, "the clearance being small."

"Assuming that from some cause the cowl was caught by the rotating engine, the remainder of the accident admits of explanation. Stays to the mast to which the upper wing wires were attached came forward in this machine to points immediately above the cowl. One of these forward stays may have been forced back, putting a strain on the outer wire above the wing and drawing it out from its attachment. The shearing of the bolts of the attachment of the outer lift wire may have occurred immediately after, or may have followed owing to flapping of the wing. From the National Physical Laboratory report and from the evidence of the representative of the Deperdussin Company, it was clear that the wing would not then be able to bear the stresses falling on it. The wing would thus give way and the machine fall. The loose upper wing wire at some period became coiled round the engine." The question of engine mountings in this machines also engaged the attention of the Committee.

The accident to the Bristol machine at Wolvercote was caused, it is assumed, by the failure of a quick release device which liberated a steel strap normally screwed to the fuselage. This, swinging at the end of the left wing cable, "damaged the trailing edge of the left wing, before the strap fell off; and the loose right wing cable may also have caused damage to the fabric of the right wing." The fabric then probably burst and the machine fell. "It should be noted that in this machine the loading of the wings was high, about 9 lbs. per square foot, compared with the more normal monoplane loading of 6 to 7 lbs. per square foot in the high-speed biplane B.E.2."

"These figures refer to the average loading in steady flight. it should, of course, be borne in mind that the loading on parts of the wings will be greatly in excess of them, while the average loading will be increased by the effect of sudden gusts, warping, change of altitude, etc."

Experiments have been made at the N.P.L. which show that fabric of average quality is unlikely to rupture even under the excessive strain of greatly increased velocity unless it has been damaged in some way. The specimens of similar fabric employed by the Company which were tested were found satisfactory.

Major Gerrard's accident was due, so far as can be discovered, to the "fracture of the gudgeon pin at the piston end of the connecting rod." The Gnome Company admit this; in fact it is their own diagnosis, and they announce that an alteration of design has been made which will prevent the recurrence of such an accident.

It is shown that in a number of cases gudgeon and big end pins of the Gnome motor have fractured. Examinations of such pins have been made at the N.P.L., and the results "show clearly that the big end pin needs modification in design, while, in addition, the heat treatment, in the pin submitted to photomicographic examination, was faulty." "The material of the connecting rod was found to be satisfactory. In certain respects the design of the rod is capable of improvement. The evidence showed also that the arrangements for locking the valve into position in the piston were such that it was possible for a careless or inexperienced workman to put considerable tension on the connecting rod. This would give rise to abnormal stresses in the connecting rod during the subsequent running of the engine, and it appears possible that the fracture of the rod was due to this."

A point which held the serious attention of the committee was the strength of engine mountings, it being held that special care should be taken in mounting the heavier Gnome engines. The Gnome Engine Company have always warned their customers that the "100-h.p. engine should not be mounted without a front bearing arranged to take a full share of the weight." In the case of the Deperdussin monoplane smashed at Graveley, the front bearing was only designed to take landing shocks.

Monoplane versus Biplane.

Paragraph 34 is of sufficient importance to be quoted in full. "Considerable attention has been given to the consideration of the relative structural strength of the monoplane and the biplane. It will be generally agreed that the biplane possesses certain obvious advantages. The bridge girder construction possible in its main spars and struts admit of ample strength. Neither the main wires nor the warping wires need be brought to a point so near the ground as to incur risk of damage in starting or alighting. The Committee are, however, of opinion that it is quite possible to construct a monoplane so that it shall have adequate strength. At the same time there are certain points to which they desire to call attention; some of these are common to both types of machine. The wing skeleton should be so designed as a complete structure with diagonal members that it will stand up against the drift forces, and will not fail after rupture of a drift cable. This has been done in some, but not all existing types of machine. The main wires should not in either the monoplane or biplane be anchored to a part which is severely stressed every time the machine alights. Both the main wires and the warping wires should be secured in such a way as to minimise the risk of accidental damage. As already pointed out, this is more easily secured in the biplane. The control wires should be stranded. In the construction of future machines, it is advisable that main wires and their attachments should be duplicated. Certain of the machines inspected at Larkhill were not free from criticism in respect of some of the matters here mentioned."

The Committee are not disposed to say that the monoplane is any less inherently stable than the biplane. The greater speed of the former type makes for greater ease of control, which, in turn, means less fatigue on the part of the pilot. This is, however, quite apart from stability.

Machines should be inspected periodically, and in the beginning should be carefully tested. An engineer of extensive experience should be appointed inspector of engines, with the rank of an officer in the Royal Flying Corps. The standard of skill of mechanics should be raised, as so much depends upon their efficiency.

The general recommendations of the Committee were published in The Aeroplane last week.

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I print here a paragraph dealing with the gyroscopic effect of a rotating engine and propeller. Its interest is general. "Calculations and experiments have been made at the Royal Aircraft Factory to determine the amount of the gyroscopic action of the rotating engine (100-h.p. Gnome) and propeller. The engine is assumed to be running at 1,200 revolutions. The amount of the gyroscopic effect depends also, of course, on the rate at which the machine is being turned. In the calculation made it is supposed that this is such that a complete circle would be described in twenty seconds. Consideration of the maximum rate probable in a sudden dip leads to a nearly equal result. The movement due to this cause is then of the order of magnitude of that which would be produced by a force of 20 lbs. acting on the horizontal or the vertical rudder.

The couple due to gyroscopic action will have an effect as regards (*a*) increase of stress, (*b*) steering. There is no reason to anticipate serious consequences on either ground. There is no difficulty in taking up additional stress of the amount indicated. Probably the most important consequences would arise in the event of any insecurity in the mounting of the engine. This is a further reason for attention to this matter. In its relation to steering, the effect may be compared with that of a small gust, of known direction, and should cause no difficulty to the flyer." It will be remembered that Mr. O'Gorman referred to this point in his recent lecture to the Aeronautical Society.—W. E. de B. W.

What Comes Next?

In further reference to the above report, it is not without interest to note that the Committee, formed late in October, completed all their work and handed in their report on December 3rd. Thereafter it was considered by the Army Council, and passed on for publication. These two simple matters—a mere nothing when compared with the work of the Committee—occupied the time between December 3rd and February 4th, or about twice as long as the work of the Committee itself. Any decision regarding the future of the monoplanes could have been reached within a few days of the handing in of the report on December 3rd. Now, at last, we have the report, but we are still without any idea as to whether the monoplanes are to be altered and used, used as they are, or left to rot indefinitely.

No officer of the Military Wing of the Royal Flying Corps has flown a monoplane for more than four months. No manufacturer knows whether monoplanes are worth building. Yet these machines are classed as being "in flying order," and the Secretary of State for War has said that he intends to "foster a healthy industry." So much for the present method of organising an efficient flying corps.—C. G. G.

A Fine Day's Flying.

The fine weather of Saturday brought to Hendon a crowd which would eighteen months ago have been considered big on a summer day, and that crowd saw some excellent flying, despite a very treacherous wind, which dropped to nothing for as much as half an hour at a time and then went up to 15 or 20 m.p.h. without warning. The Grahame-White biplane pilots, Messrs. Manton and Cheeseman were flying in their usual good form, and taking up passengers. Mr. Desoutter did spirals which were more spirally than ever—one wishes one could see him on a really modern machine.

Mr. Richard Gates treated himself to his usual week-end refresher on the G.W. biplane, doing the most eccentric twists and turns, reminiscent only of the "wiggle-woggle" once so popular at Shepherd's Bush. There is no pilot who does this kind of thing with quite the neatness and finish of Mr. Gates, who seems to have evolved for himself a new line in humorous flying. And, much to everyone's gratification, Mr. Grahame-White, just back from S. Moritz, looking very fit and well, turned out and gave a short exhibition, which showed as usual the touch of a master hand on the controls.

Mr. Harold Blackburn did a long flight on the 50-h.p. Blackburn school machine, making banked turns which were certainly impressive, but, unpleasant though it is to say so, there is a growing feeling that he is in for a bad smash if he happens to drop into a down-draught while starting one of these turns with his tail low, as he does only too often. A little more caution in forcing the machine up would add to rather than detract from his reputation as a pilot.

M. Richet, on the British Bréguet, was up many times during the afternoon flying in excellent style, his long, straight glides being much admired. He took up several passengers, among them Mr. Sydney Pickles, and Mr. Thorburn of the "Financial World," one of the most enthusiastic supporters of aviation among journalists.

A number of Caudron pilots were also out. Mr. Turner, on the 60-h.p. flew in his usual good form. Mr. Ewen himself was also on this machine. Lieut. Noel, on the school 35-h.p., flew the first half of his brevet tests in a stiff wind of 25 m.p.h as steadily as any experienced pilot. A new pilot of remarkable promise, Mr. Temple, who has not even taken his certificate, made several flights on a 35-h.p. which he has bought recently. His general style of flying, and particularly his starting and landings, would lead anyone to think that he was quite an old flyer.

Often there were four or five machines in the air at once, and, cold as it became in the evening, most of the spectators remained till it was nearly dark, so great was their interest. That so many people should go to Hendon at this time of the year shows the enthusiasm one may expect later on.

Even on Sunday, despite the miserable weather, there was quite a good crowd present, and the various aviators gave them an excellent show of flying. Many new pupils are joining the schools, and there will be great activity when settled weather at last arrives.—C. G. G.



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WHAT TO SEE AT OLYMPIA—Part II.

The War Office lends His Majesty's airship "Delta," a small dirigible of 165,000 cubic feet capacity, or 5½ tons displacement, and about 200 feet long. These figures may be compared with those of the new Zeppelins, which are of 800,000 cubic feet, 25 tons displacement, and are 500 feet long by 50 feet diameter. The speed of the "Delta" is approximately 44 miles per hour against the new Zeppelins' 55 to 60 m.p.h. The "Delta" carries a crew of six. The Zeppelins can carry 25 people. In the present Zeppelins, which are 20-ton ships, the vessel complete weighs 14 tons, four tons are allowed for the crew, and fuel for 20 hours, and there is two tons reserve lift for passengers—or explosives. The "Delta's" two engines give 100 h.p. The new Zeppelins will have between 700 and 1,000 h.p.

The Royal Aircraft Factory Biplane labelled "B.E.2," another loan from the War Office, is not the original "B.E.2" on which Mr. de Havilland has done so much good flying, but is a brand new machine built to the same design. It is, however, an interesting exhibit as showing the clever way in which the Factory designers have combined the ideas which numerous independent constructors evolved some two or three years ago. The planes are more or less Biérlot, the general arrangement is Avro, the spring suspension is Farman, the tail is more or less Nieuport, the fuselage shape is Bréguet, the hollow struts are Maurice Farman, and various other good ideas have been collated from other makers, the result being, with the 70-h.p. engine, a fast biplane which answers its controls promptly, and is generally liked by its pilots, though, in justice to the independent constructors, it is well to note that when fitted with a 50-h.p. Gnome it is not as efficient as the 50-h.p. Avro of 1912 type.

This point should be remembered, as there is a tendency in certain circles to regard the "B.E.2" as the most efficient machine in the world, and so far in advance of anything else that it ought to be standardised for the use of the Royal Flying Corps to the exclusion of all other types, an action which would at once put a stop to all further development by private enterprise.

The presence of this machine also gives the first opportunity of comparing the finish and workmanship of the Royal Aircraft Factory staff with that of independent constructors, and, be it said, the majority of the latter are well able to stand the comparison.

The Cody Biplane, which is also lent by the War Office, is the machine which won the Military Aeroplane Competition last August, and £5,000 worth of prizes. It has been described and illustrated many times in The Aeroplane, and is practically of the same design as Mr. Cody's aeroplane of 1909. Nevertheless, it is one of the most interesting machines in the Show, if only because it shows how far advanced Mr. Cody was four years ago.

The Aircraft Manufacturing Company, Ltd., will exhibit two military passenger-carrying biplanes, a Maurice Farman fitted with a 70-h.p. Renault motor, and a Henry Farman fitted with an 80-h.p. Gnome. Both these machines will be of the latest type, showing many important detail improvements over the 1912 type. It is satisfactory to note that both machines have been built in England by the Aircraft Company. One need hardly emphasize the popularity of the Farman biplanes among all European War Offices. The main points to be noted concerning the performance of these two types are the essential safety of the Maurice Farman and the essential speed and mobility of the smaller Henry Farman, which can be dismantled and assembled with remarkable rapidity. Both machines are navigable in practically any weather, and while neither of them makes any great demand upon the strength and skill of its pilot, the Maurice Farman may be said very nearly to pilot itself. This point may have something to do with the fact that a Maurice Farman holds the world's records for time in the air—13 hours—and for distance of continuous flight—over 1,000 kilometres.

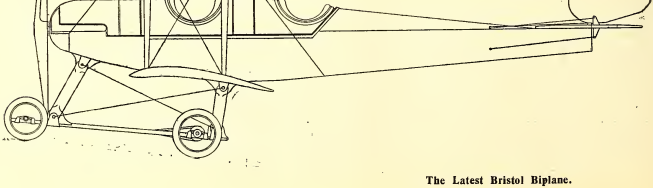
Both machines are capable of being fitted with floats for water-work, and so efficient are the resulting hydro-aeroplanes that, at the first Monaco hydro-aeroplane meeting, the first prize went to a Henry Farman, and the second to a Maurice, while more recently the latter machine has been awarded the first prize in connection with the great international meeting at Tamise. It will be recollected that, in the series of hydro aeroplane demonstrations given during the summer of 1912 at various English watering-places, the machines used were Farmans supplied by the Aircraft Company.

M. Henri Fabre was one of the first to devote himself to the development of water-aircraft. Floats of his design have given great satisfaction on various machines in France. The Aircraft Company have acquired the sole English rights to construct these floats, and will show one of them at the exhibition.

Another exhibit of great interest will be a motor-driven aeroplane repair shop, similar to the type at present used in the French army. The chassis is by Dennis Brothers, Ltd. The sides of the body are made to open out and to stand on legs, thus increasing the available floor space when at rest. Within the workshop is a lathe and drill, electrically driven, and benches fitted with vices, forge, and various other necessary tools by Drummond Brothers, Ltd.

The Aircraft Company will also show, among other accessories in which they have acquired sole British rights, the Etevé speed indicator (which is universally used in the French army) and the Behrens revolution counter.

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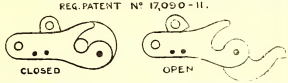
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The British and Colonial Aeroplane Company, Ltd., better known as the "Bristol" Company and makers of the aeroplanes bearing that name, will exhibit a 70-h.p. military type two-seated tractor biplane, of which the main details are as follows:—Length, 8.5 metres; span, 11.6 m.; chord, 1.84 m.; area, 40 sq. m.; weight (unladen). 430 kg.; weight of pilot and passenger, 160 kg.; petrol, oil, and spare weight, 240 kg.; total load, 400 kg.

The fuselage is four-sided and covered with aluminium from bow to passenger seat, and with fabric (laced) from passenger seat to tail. The seats are placed tandem, the passenger, who occupies the front seat, being directly over the centre of gravity. thus his presence or absence does not affect the machine's balance

Two very interesting features should be noted, the first a window in the aluminium floor before the passenger's seat; this window is glazed with wired glass—which says a good deal for the designers' confidence in the machine. The second feature is the particularly neat manner in which the aluminium covering is sloped up from the engine housing to form an effective wind-shield about the passenger and pilot, the shield's edge being upholstered with a circular pneumatic cushion. The passenger's seat is so designed that a sloping instrument-board may be placed conveniently inside the shield.

The wing structure is particularly interesting. Each wing is supported by two main spars of steel tube cored with wood, both rear and front spars being hinged and attached to the fuselage or—in the case of the upper plane—to the middle wing section by a patent quick-release device. The ribs, which are of wood covered with fabric to prevent splitting, are loosely journalled upon the main spars; thus all the wing flexibility desirable is attained without imposing any abnormal strains either upon spars or ribs. The ribs are equally spaced by means of a front and rear edge, and also by battens parallel with the main spars; each wing is braced internally by diagonal wires in three bays. The upper and lower front spars are braced together diagonally by stout cables. The rear spars are braced only by the warp-control wires, which pass upward from the rear lower spar and downward from the upper rear spar to the points of attachment of the front spar bracings.

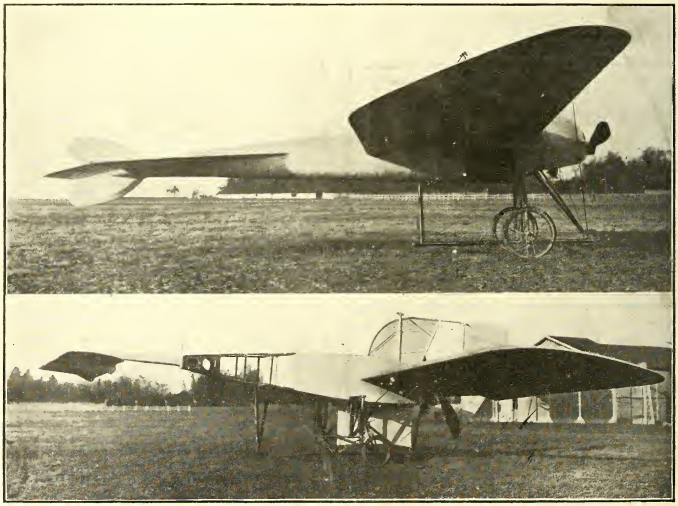
The empennage is non-lifting; the rudder, which is situated in front of the empennage, is pivoted slightly in front of its centre of pressure.

The control is dual; all moving gear is made of non-magnetic material, and all control wires are duplicated.

The chassis, as may be seen from the drawing, is almost exactly similar to that of the monoplanes which have already met with high approval in Italy, Spain, Roumania, and elsewhere since this type was introduced.

M. Louis Blériot is showing an 80-h.p. Gnome-engined two-seated tandem monoplane, type XI-2. The length is 27 feet, the span 31 feet, the area 198 square feet, and the weight 800 lbs. Machines of this pattern have attained a speed of 75 m.p.h. Orders are already in hand for over thirty of them for most foreign Governments, except that of Great Britain. M. Blériot will also show photographs of their latest models, including the "Monocoque," the "Canard" hydro-aeroplane, and a new type of side-by-side passenger machine.

The "Canard" is, perhaps, the most interesting of these three machines—at any rate it is the most startling, for in design it is almost revolutionary. The most unique features



Two New Blériots:—Above, the "Monocoque": Below, the "Canard."

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about the machine are, firstly, the absence of any structural tail, the rudder being mounted immediately in rear of the propeller, which, in turn, is placed behind the main planes; and, secondly, the presence of a structure which, for lack of a better term, one might call a neck, which stretches forward from the body and bears the elevator. Since this neck is of approximately the same length as an ordinary monoplane's tail, the machine, when first seen in the air, produces the spectacle of a normal monoplane flying tail first.

Despite its unconventionality the machine has proven itself an excellent flyer and its production shows M. Blériot to be still as progressive and as free from the shackles of tradition as he was in the days when one regarded the Channel flight with the same awe as one regards to-day the prospect of flying over the Atlantic ocean.

The side-by-side machine has the engine and propeller behind the pilot and passenger as shown in the accompanying sketch.

The Bréguet Biplane.—Bréguet Aeroplanes, Ltd., are showing an all-steel British-built biplane fitted with an 80 h.p. Canton-Unné engine placed horizontally in the nose of the fuselage, the propeller being driven through bevel gearing. A new type landing chassis is fitted. A slight difference is made in the wing staying from that adopted in the French models.

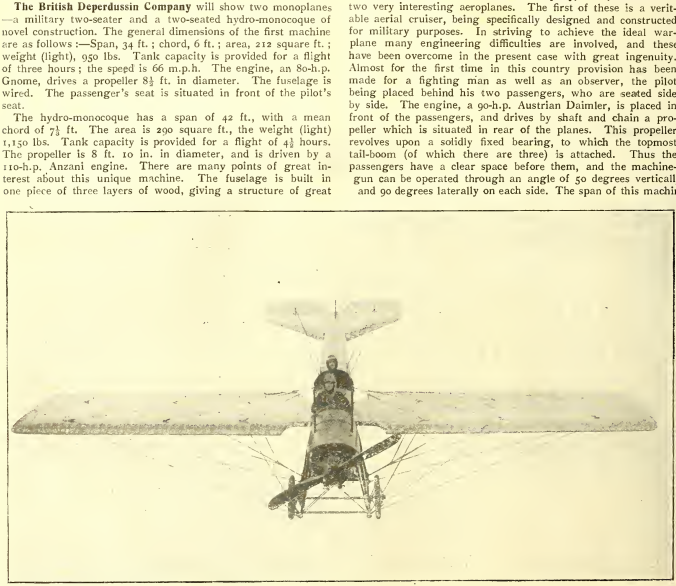
The British Deperdussin Company will show two monoplanes—a military two-seater and a two-seated hydro-monocoque of novel construction. The general dimensions of the first machine are as follows:—Span, 34 ft.; chord, 6 ft.; area, 212 square ft.; weight (light), 950 lbs. Tank capacity is provided for a flight of three hours; the speed is 66 m.p.h. The engine, an 80-h.p. Gnome, drives a propeller 8½ ft. in diameter. The fuselage is wired. The passenger's seat is situated in front of the pilot's seat.

The hydro-monocoque has a span of 42 ft., with a mean chord of 7⅓ ft. The area is 290 square ft., the weight (light) 1,150 lbs. Tank capacity is provided for a flight of 4½ hours. The propeller is 8 ft. 10 in. in diameter, and is driven by a 110-h.p. Anzani engine. There are many points of great interest about this unique machine. The fuselage is built in one piece of three layers of wood, giving a structure of great strength and durability. There is one main central float and three subsidiary floats under the wing-tips and tail, respectively. The machine is provided with ailerons. The passenger, as in the former case, is seated in front of the pilot.

The most characteristic feature of all, however, is the manner of staying the planes, the new method employed allowing overhead wires to be dispensed with entirely.

W. H. Ewen, Ltd., will show two Caudron machines, namely, a biplane and a single-seated monoplane, fitted with a 45-h.p. Anzani engine. This is the machine which M. Guillaux used last year during the Aerial Derby, and will be exhibited in place of the new 50-h.p. Gnome-engined monoplane which Mr. Ewen would have shown had not the machine been sold at the last moment. A similar misfortune—or fortune, according to the point of view—has prevented Mr. Ewen from exhibiting a new 35-h.p. "Y" type Anzani-engined biplane, as he had intended to do, for Mr. A. W. Jones, the Australian agent for Caudron aeroplanes, has bought this machine and sent it off to Australia. In its place Mr. Ewen is endeavouring to secure a still newer 35-h.p. biplane from France; if he fails to do so, he will exhibit the Ewen school brevet machine. Mr. Ewen will also show a novel type of motor, a range of Gremont propellers and examples of the Kelvin compass.

The Grahame-White Aviation Company, Ltd., will exhibit two very interesting aeroplanes. The first of these is a veritable aerial cruiser, being specifically designed and constructed for military purposes. In striving to achieve the ideal warplane many engineering difficulties are involved, and these have been overcome in the present case with great ingenuity. Almost for the first time in this country provision has been made for a fighting man as well as an observer, the pilot being placed behind his two passengers, who are seated side by side. The engine, a 90-h.p. Austrian Daimler, is placed in front of the passengers, and drives by shaft and chain a propeller which is situated in rear of the planes. This propeller revolves upon a solidly fixed bearing, to which the topmost tail-boom (of which there are three) is attached. Thus the passengers have a clear space before them, and the machine-gun can be operated through an angle of 50 degrees vertically and 90 degrees laterally on each side. The span of this machine



"En Vol Plané."—A fancy picture of Lieut. Porte, R.N., and Mr. Spratt gliding on the 80-h.p. Deperdussin. (The photograph was actually taken on the ground, which has been painted out.)

is 42 feet, the chord 6 feet, the length 33½ feet. The total weight is 2,300 lbs., the speed 60 to 70 m.p.h.

The second machine will be a two-seated hydro-biplane, with a span of 42½ feet, a chord of 4 feet 10 inches, and a length of 25½ feet. It will weigh 1,100 lbs., and will fly at 45 to 55 m.p.h. The motor will be a 60-h.p. Anzani. Beside these machines the company will show a 50-h.p. Gnome Royal Aircraft Factory type propeller in six stages of manufacture, a hollow strut in five stages of manufacture, and many other specimens of struts and spars.

Handley Page, Ltd., will exhibit a 50-h.p. Gnome-engined monoplane. This machine has a span of 42 ft., and is 28 ft. long; the wing area is 240 sq. ft., and the weight, at present, is 850 lbs., though Mr. Handley Page intends to reduce this by 100 lbs. in future models. The monoplane is a two-seater and carries sufficient fuel and oil for a flight of three hours' duration. Its speed is 58 m.p.h. This particular machine has flown upwards of 2,000 miles since it was first built. It has carried many scores of passengers, and has been seen in the air both at Hendon and Brooklands, where it has attracted great attention even among the unlearned by virtue of its graceful and bird-like appearance. The wing tips, as is well-known, have a negative angle of incidence, and the machine possesses a great measure of inherent stability.

A Stolz Electrophone will be fitted, by means of which the pilot and passenger may converse without difficulty.

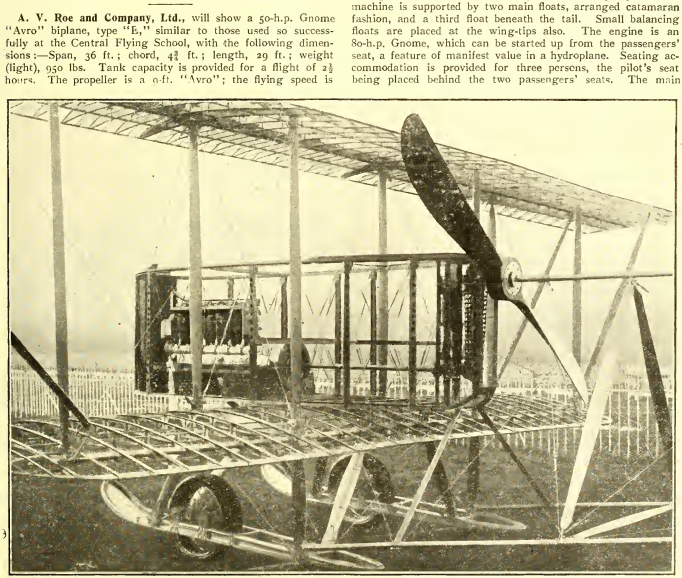
A. V. Roe and Company, Ltd., will show a 50-h.p. Gnome "Avro" biplane, type "E," similar to those used so successfully at the Central Flying School, with the following dimensions:—Span, 36 ft.; chord, 4¾ ft.; length, 29 ft.; weight (light), 950 lbs. Tank capacity is provided for a flight of 2½ hours. The propeller is a 9-ft. "Avro"; the flying speed is 45-62 m.p.h., and the price is £950. The wings are covered with "Avro" fabric treated with Cellon. An interesting feature is the new wing-tip skid. The absence of the older bamboo bow will be noted, and its replacement by a universally pivoted skid of kickory, at the end of which are ranged a couple of hollow wooden wheels fitted with rubber tyres. A somewhat similar skid is provided at the rear as a tail-skid.

The machine is fitted up with Clift compasses and inclinometers, also with the "Avro" safety belt with its double-release device.

The company will also show specimens of their propellers, notably the new copper-tipped propeller for hydro-aeroplane work.

Mr. J. Robertson Porter will show a unique machine of the helicopter type, which he calls the "Gyropachute." The machine consists of two parachute-shaped surfaces, one below the other, the space between being occupied by a centrifugal propeller of 6½ feet diameter, actuated by a 50-h.p. Gnome engine. The pilot occupies a small coracle fixed some distance below the engine. The diameter of the machine is 14 feet, its height 11 feet.

Messrs. Short Brothers will exhibit on Mr. Percy Grace's stand a tractor hydro-biplane, resembling in general design the firm's famous S41 type, which was flown with such success during the Naval Review at Weymouth in May, 1912. The machine is supported by two main floats, arranged catamaran fashion, and a third float beneath the tail. Small balancing floats are placed at the wing-tips also. The engine is an 80-h.p. Gnome, which can be started up from the passengers' seat, a feature of manifest value in a hydroplane. Seating accommodation is provided for three persons, the pilot's seat being placed behind the two passengers' seats. The main



The Internal Arrangements of the Grahame-White "Warplane."

dimensions of the machine are as follows: span, 48 feet; chord, 5 feet; gap, 5 feet; length (over all), 34½ feet; height, 11½ feet. The biplane is provided with ailerons for lateral balancing; the tail is non-lifting. Messrs. Short Brothers have devoted a great deal of attention to the development of this type of hydro-aeroplane, and the trials of this promising production will be watched with considerable interest.

The Sopwith Aviation Company will show two particularly interesting machines—namely, an 80-h.p. tractor biplane and a 90-h.p. hydro-biplane, known officially as the "Bat-boat." The first characteristic point which strikes one on examining the construction of these machines is the extent to which the piercing of wooden members has been avoided. Where the piercing is unavoidable, the disadvantage is amply compensated by encasing the weakened portion with steel. The sockets which support the stanchions are built right round the main spars, and so, since these socket members also form the anchorage for the load wires, the load, instead of being concentrated practically at a point, is distributed over a considerable portion of the spar, while the latter is relieved from the breaking strain set up by the pull of wires and the push of the stanchions.

All flying wires are of stranded steel cable and are doubled in the case of load-wires; the main warp cable—which runs in one length from wing-tip to wing-tip through gunmetal pulleys—is also double. The cable which actuates the warp is quite distinct from the duplicated main cable.

The main wing spars are built up with ash cores and hollow spruce sides, glued together under pressure and firmly bound; most of the compression struts are similarly constructed. The ribs are made of a wood so elastic that they may be twisted through an angle of 90 degrees and yet regain their normal shape on being released. These details are common to both the machines shown.

In the land-going biplane, in order to relieve the fuselage of all compression during flight, the main spars are continued to the centre of the body, where they are built together and joined by steel plates.

In the chassis, wheels take the place of upturned skids. The axle is streamlined, and in the general design of the chassis head resistance has been reduced as far as is compatible with strength and flexibility. The tail unit is constructed largely of steel tubing, as are the tips and trailing edges of the main planes.

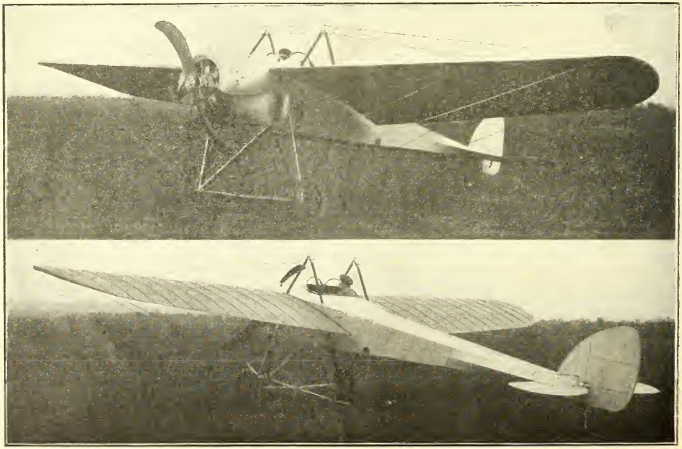
Other noteworthy details are the windows, which are of pliable and non-inflammable material, and the upturned lip in front of the seats; this bend is sufficient to divert the slipstream over the heads of passenger and pilot.

Both machines are designed to fly at a minimum speed of 42 m.p.h. and a maximum of 65 m.p.h. Other interesting details of the specifications are as follows:—

The "Bat-boat": Weight, light 1,200 lbs., laden 1,700 lbs.; area of main planes, 422 square ft.; of tail planes, 22 square ft.; of front elevator, 15½ square ft.; of rear elevator, 15½ square ft.; of rudder, 10 square ft. The motor is a 90-h.p. Austrian Daimler.

The tractor biplane: Weight, light 1,000 lbs., laden 1,750 lbs.; area of main planes, 365 square ft.; of tail plane, 39 square ft.; of elevators, 20 square ft.; of rudder, 11 square ft. The motor is an 80-h.p. Gnome.

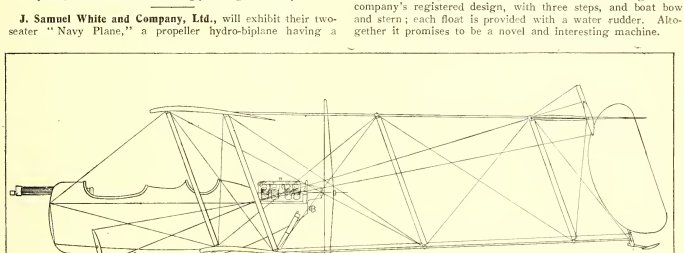
Vickers, Ltd., will exhibit two aeroplanes, a two-seater (side by side) monoplane, with a span of 30 ft. and a chord of 6½ ft., engined with an 80-h.p. Gnome; and a biplane with a span of 40 ft. across the upper and 30 ft. across the lower plane, and a chord of 6 ft., engined with an 80-h.p. Wolseley. They will also exhibit specimens of their non-corrodible Duralumin metal, which has a specific gravity of 2.8 and a tensile strength of 35 tons per square inch. The Vickers machines will be worthy of special attention, for the monoplanes built by the firm have been singularly successful, although built purely as experiments and fitted with experimental engines. The first biplane, built quite recently, flew steadily at 45 m.p.h., and with the 70-h.p. engine running full power it developed a speed of 63 m.p.h.; consequently, one may expect big things of the new biplane, which will be seen at the show.



Two views of the new Vickers Monoplane.

There is something particularly striking about the general appearance of both the machines shown. Both are neat and workmanlike in their lines—the biplane's staggered planes, the streamlined struts, the machine-gun's excellent position in the extreme front, allowing the widest possible angle of fire, both laterally and vertically, the strength and simplicity of the chassis, combine to create an unusual impression of efficiency. A notable feature about the monoplane is the way in which the engine housing is shaped to form a dual wind-screen for pilot and passenger, who sit side by side. As in the case of the biplane, the chassis is exceedingly strong and simple.

J. Samuel White and Company, Ltd., will exhibit their two-seater "Navy Plane," a propeller hydro-biplane having a span of 44 ft., a chord of 6½ ft. across the upper plane and 5½ ft. across the lower. The area of supporting surface is 500 sq. feet. Mr. Howard Wright's patent type of plane section is used, the angle incidence being 3 degrees. The weight (light) is 1,350 lbs. The machine is engined with 160-hp. Gnome, which drives a propeller 9½ feet in diameter. The speed range is designed for 35-70 m.p.h. Tank capacity is provided for 40 gallons of petrol and 14 gallons of oil. The main planes are set at a slight dihedral angle; the wings are retarded with negative tips and double acting ailerons. The tail is non-lifting. The two floats are built according to the company's registered design, with three steps, and boat bow and stern; each float is provided with a water rudder. Altogether it promises to be a novel and interesting machine.



The New Vickers Fighting Biplane.

ENGINES AND ACCESSORIES.

Messrs. T. B. André and Company will exhibit the new Rotary Clerget engine, which is produced by Messrs Malicet and Blin, of Paris, who claim for this motor an economy of petrol and oil unusual in engines of the rotary type. This engine has 7 cylinders 120 mm. by 120 mm. The brake h.p. is 50/60 at 1,250 r.p.m. The weight, without oil and petrol tanks is 200 lbs. Petrol consumption 4.75 gals. p.h.p. hour. Oil consumption 1 gal. p.h.p. hour. The firm will also show an 8-cylinder V-type water-cooled engine, cylinders 140 mm. by 160 mm., developing 200 h.p. at 1,200 r.p.m. The weight complete, but without tanks, is 500 lbs. The petrol and oil consumption per h.p. hour 13.2 and 1.76 gals. respectively.

The Green Engine Company, Ltd., will exhibit five engines, two of which are of particular interest apart from their efficiency in that they have helped to make history. These are the 100-h.p. six-cylinder, lent by Mr. S. F. Cody, with which he won the Michelin cross-country prize with a flight of two miles; the other, also lent by Mr. Cody, a 65-h.p. four-cylinder, which has flown over 7,000 mile. It was used by Mr. Cody in the Circuit of Great Britain (which accounts for 1,010 miles of its journeying), and in the Michelin duration test, which it won with a flight of 5½ hours. It also won the 1911 Michelin cross-country prize, under Mr. Cody's pilotage, with a distance of 126 miles. It may be mentioned here that out of the six Michelin competitions which have been held in this country, five have been won by machines fitted with Green engines.

Beside these two veterans, the firm will show three new engines, a six-cylinder 100-h.p. motor, which has been sold to the owner of a hydro-aeroplane who intends to mount this engine for use during the Monaco meeting. The next motor to be considered is a 65-h.p. four-cylinder, similar to that which won the Patrick Alexander international competition for £1,000, when it set up a world's record by running without an involuntary stop for 26 hours and 7 minutes, in the course of which it made more than two million revolutions without a single misfire. The last engine is a 35-h.p. four-cylinder, similar to that which went through the Patrick Alexander competition of 1910 with such phenomenal success. It will be recollected that six engines were entered, three actually competed, and the Green motor alone completed the test, running for 24 hours with one stop of eight minutes at the end of the first hour, necessitated by a faulty sparking plug.

The firm will also exhibit parts of these engines; the great strength of the 100 h.p. crankshaft being particularly noticeable when that piece is seen by itself.

Details of the engine are as follows:—The cylinders of the 35-h.p. engine are 105 mm. by 120 mm., it turns at 1,250 r.p.m. The oil consumption is ½ gallon per hour. The cylinder dimensions of the 65 h.p. engine are 140 by 146; it turns at 1,200 r.p.m., and consumes ¾ gallon of oil per hour. The 100 h.p. cylinders are 140 mm. by 152 mm. It turns at 1,175 r.p.m. and its oil consumption is 1 gallon per hour. As to petrol consumption, the 65 h.p. engine has set a world's record for economy by using something under 5 gallons per hour. Lubrication is by a very efficient form of forced feed.

Finally, the general cleanness of design and absence of external working parts make the engine one of the most attractive that have been produced hitherto.

Renault, Ltd.—Details of the engines to which reference was made in last week's issue of The Aeroplane, are as follows:—The 70-h.p. engine: 8 cylinders, air cooled, 96 mm. by 140 mm. Speed 1,800 r.p.m. Weight without tanks 307 lbs. Lubrication is by internal circulation. The 50-h.p. motor is similar, the cylinders being 90 mm. by 120 mm., and the weight 375 lbs. The 100-h.p. engine is also air cooled and has 12 cylinders, 96 mm. by 140 mm. It revolves at the same speed, and weighs 639½ lbs.

M. Emile Salmson, of Billancourt (Seine), will show a series of six engines on the Canton-Unné system, differing in type

and power. There will be three of the 7-cylinder 85-h.p. motors, with cylinders arranged radially. One of these will be shown open for inspection, another mounted with crankshaft horizontal, and the third with crankshaft vertical, to be geared down. Two 110-h.p. 9-cylinder motors will be shown mounted similarly. The last will be a 60-h.p. engine of original design with cylinders parallel to the shaft.

Aeros, Ltd., are bringing out a new series of lubricating oils and greases specially adapted for use in aviation engines of all types, both air-cooled and water-cooled. They are also about to market a grade of pure castor oil, which will be designated the "A.L." brand. These will be shown in addition to the goods mentioned last week.

Bowden Wire, Ltd.—The chief product which gives this firm its title is too well known to require description. The advantages of transmitting motion without the use of rods, angle-levers, cables and pulleys, with the multitude of nuts and bolts which their use involves, appeal to the aviation engineer even more forcibly than they do to the motorist. M. Blériot and Mr. S. F. Cody are among the more prominent aviators who make use of the Bowden Wire system of control. Beside this speciality, the company now markets many other accessories which will prove of great interest to the aviator, such as, for instance, the gas-throttle, the auxiliary air inlet, the petrol strainer, and the various other fitments they have devised, all of which will be exhibited at the forthcoming show.

The Cellon Company will show many examples of various products, including their all-British dope, their non-inflammable celluloid, both in the form of manufactured articles and in the form of sheets, plain and coloured. An interesting feature of their exhibition will be a series of photographs illustrating machines in which Cellon has been used. The exhibition of this dope, however, will not be confined to the Cellon stand, for very many of the machines on show will be treated with this material.

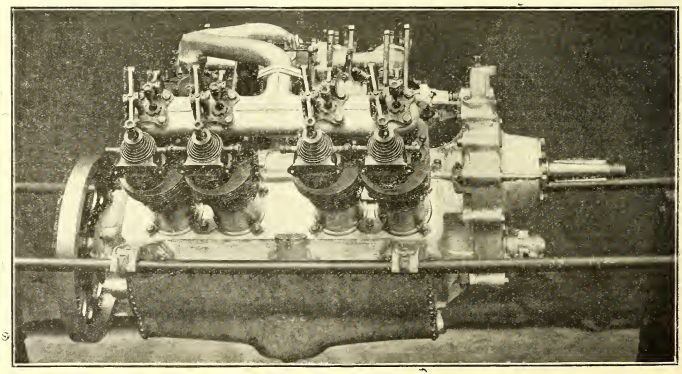
Messrs. W. F. Dennis and Company, as agents for the Felton und Guilleaume Carlswerk A.G., of Mulheim-on-Rhine, will show a large selection of the "Neptune" brand special steel flexible strands and ropes for purposes of aviation. This firm has been drawing steel wires for eighty-five years, and during that period has developed its methods to such a pitch of perfection that the modern product, composed of special galvanised piano wire, possesses the enormous breaking strain of 140 to 145 tons per square inch of section. It is important to note that this strength is developed after the wire has been subjected to the galvanising process. Specimens will be shown of every gauge of strand and cord that is useful to aeroplane constructors. Cords of cheaper qualities and finishes will also be shown, as well as a selection of anchor ropes for holding airships, with thimbles, eyes, and shackles attached in a very efficient manner —namely, spliced in. An assortment of galvanised springs will be shown as well, in gauges 11, 12, 13, and 14, and varying in length from $\frac{7}{8}$ in. to 8$\frac{1}{2}$ in

Alfred Dunhill, Ltd., will exhibit, among other accessories already mentioned, the "Premier" aero compass and the Alexander Gross bearing finder, both of which are illustrated herewith. The former is a liquid compass, four inches in diameter, having a 3-inch dial. It is made of brass with a black bronze finish. It is provided with a revolving index for registering bearing and is marketed at four guineas.

The bearing finder enables one to ascertain the exact magnetic bearing of any course. It consists of a transparent disc fixed upon a transparent square plate, both disc and plate being engraved with compass division. The disc may be moved east and west to correspond with the magnetic variations ruling in all parts of the globe. A variation chart of the world is included with the instrument, which is very compact and should prove exceedingly useful for cross-country flying.

The General Aviation Contractors, Ltd., will exhibit on their accessory stand, in addition to the goods mentioned last week, a complete set of Tellier floats for hydro-aeroplanes. The Tellier firm, as is well known, is one of the most renowned motor-boat and hydroplane builders in France. It is interesting to note that these floats are being fitted to the Astra and Farman hydro-aeroplanes now under construction for the British Admiralty. The other G.A.C. exhibits have been described previously.

Messrs. Hewlett and Blondeau will exhibit an exceedingly varied selection of their products. Of particular interest will be the specimens of acetylene welding, the popularity of which is too well known to require emphasis. They will also show an aluminium shield dome, and two sets of engine plates for the mounting of a 50-h.p. Gnome motor upon a monoplane and upon a biplane. Besides these exhibits, they will show a large range of structural and other accessories, such as inclinometers, revolution counters, cables, wires, and petrol-tanks fitted with "Securitas" fireproof tubes; and, finally, they will show



The New 60-80-h.p. Wolseley Aeroplane Engine, described last week, with water-cooled exhaust boxes and air-cooled cylinders.

examples of the "Ruzlez" process for aeroplane and hydroplane metal.

Jo-eph Lucas, Ltd., will show many interesting accessories, including complete dynamo lighting systems, accumulators, switch-boxes, lamps, etc., specially adapted for aeroplane work.

William Mallinson and Sons, Ltd., will show a varied selection of timbers suitable for aeroplane construction—silver spruce, ash, American poplar, stringy poplar, hickory, and rock elm. They will also show veneers and specimens of their three-ply woods, as well as timber—such as cedar—which is particularly well adapted for the construction of hydroplane floats, and teak, mahogany, French and American walnut, which are used in the manufacture of propellers.

M. Al. Marquer, of Paris, will exhibit several interesting kites and model aeroplanes. These machines are scientifically designed and constructed with characteristic accuracy. Perhaps the most attractive of these machines is the "Type Canard," with a chassis of aluminium and silken wings, whose angle of incidence may be varied at will.

Richard Melhuish, Ltd., will show a great variety of wood and metal working tools, machinery, and benches. Among the tools is one which will appeal particularly to those who have dealings with steel wire, namely, a wire cutter of special design, affording great leverage and providing a jaw that does not chip each time a wire is cut. The firm will also show specimens of their high tension steel wire, which they supply in any gauge, British and Continental. They recommend this wire in preference to the ordinary piano wires, which, although slightly stronger in pure tension, cannot stand the bending tests to which this high tension wire is subjected.

The Motor Radiator Manufacturing Company will show a range of petrol-tanks and radiators specially designed and constructed for use in aircraft.

The Spiral Tube and Components Company will show examples of their radiators. The advantages claimed for these radiators are efficiency, strength, lightness, and ease of repair in case of damage. The company will also show tanks as well as other sheet metal work, and examples of acetylene welding.

The Ideal Engine Stand.

Brown Brothers, Ltd., are putting on the market an apparatus which should prove as useful an adjunct to the hangar as it will to the practical motorist's workshop; this is an engine-stand. The frame, to which the engine may be attached, can be rotated and fastened firmly in any position, so that any portion of the engine may be examined and worked upon conveniently without undoing the engine fixing. The stand is mounted upon rollers so that it can be shifted to suit the exigencies of the workshop.

Partnership.

The partnership between John Harley Bridges Hesse, Gerald Savory and Robert Bamford carrying on business as "Hesse and Savory," has been dissolved by mutual consent. All debts owing by the late firm will be paid by Mr. Gerald Savory, who will continue to carry on the business alone under the present style of "Hesse and Savory" at Teddington. Mr. John Harley Bridges Hesse, though no longer a partner in the business, will continue to share its management with Mr. Gerald Savory.

What an Aerodrome Looks Like.

Those who have never been in the air should not fail to see the large model of the Hendon ground which is being shown on the London Aerodrome's stand at Olympia, on the Hammersmith Road side of the hall. This has been built to a scale of 60 ft. to the inch, and so from a height of five feet it gives exactly the impression that the real thing does from 3,600 feet. Every shed, the railway embankment, fencing, enclosures, pylons, and so forth, have been reproduced exactly to scale, and the effect is most realistic.

Congratulations.

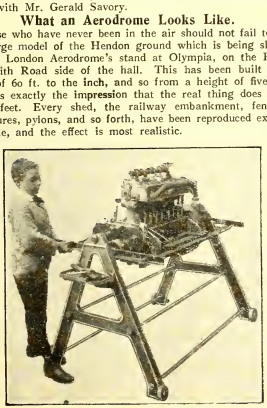
Mr. C. D. Clayton, the Press manager for the Olympia Show, is to be congratulated on the energetic way the show has been advertised this year. Thanks to his influence the daily papers are taking quite an intelligent interest in the show, and have been well supplied with readable and accurate paragraphs, drawing their attention to the notable machines which will be seen there. The posters, too, are striking, and are a great improvement on those of previous years, though, perhaps, a carping critic might find fault with the technicalities of some of the machines therein. Mr. Clayton's advertising for the various motor concerns for whom he operates, has always been clever, and calculated to arrest attention without being "bad form," and doubtless when the aeroplane industry is in a position to advertise largely to the general public, his ability in this direction will not be forgotten. The initials C. D. C. in the corner of an advertisement mean business.

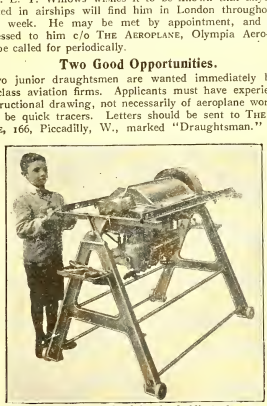
Concerning Airships.

Mr. E. T. Willows wishes it to be known that anyone interested in airships will find him in London throughout the show week. He may be met by appointment, and letters addressed to him c/o THE AEROPLANE, Olympia Aero-Show, will be called for periodically.

Two Good Opportunities.

Two junior draughtsmen are wanted immediately by two first-class aviation firms. Applicants must have experience of constructional drawing, not necessarily of aeroplane work, and must be quick tracers. Letters should be sent to THE AEROPLANE, 166, Piccadilly, W., marked "Draughtsman."





The Ideal Engine Stand, showing ease of movement of the engine when fixed in the holding clamps.

The Week's Work.

MONDAY, February 3rd.

R.F.C., Central Flying School.—Very strong south-westerly wind, very bumpy; dull. On B.E. 416 Capt. Salmond 7 mins. excellent flying in fearful wind.

TUESDAY, February 4th.

R.F.C., Farnborough.—West wind, 40 miles; sun in morning, but overcast in afternoon. In afternoon Mr. de Havilland on B.E. 217 for few circuits, good display; no other flying.

Hendon.—At Deperdussin School Mr. Spratt tried wind on No. 4 bus, with couple of circuits.

At Blackburn School.—In afternoon Mr. H. Blackburn test on No. 2.

At Grahame-White School.—A new pupil poined, Mr. J. G. W. Gamson.

Brooklands.—At Vickers School, in the afternoon Mr. Barnwell doing circuits on No. 5 mono in high wind.

At Bristol School.—Late in afternoon Mr. Merriam up for test, but too bad for pupils.

Salisbury Plain (Bristol School).—Mr. England out on newly erected 80-h.p. mono for 20 minutes in a wind of fully 40 m.p.h.

WEDNESDAY, February 5th.

R.F.C., Central Flying School.—Freshening southerly wind, blowing almost gale during the afternoon. Dull. On Avro 404, Capt. Fulton, R.F.A., with Lieut. Read on practice ground 30 mins.; Lieut. Small 15 mins.; Air Mechanic Higginbottom with Lieut. Littleton 15 mins. On Avro 406, Air Mechanic Higginbottom with Sergt. Goodchild 20 mins., with Ldg. Seaman Marchant 30 mins. Capt. Fulton with Lieut. Holt 20 mins. on practice ground; Lieut. Holt 10 mins. alone on practice ground and 8 mins.' circuit round aërodrome; Capt. Fulton with Capt. Mellor 10 mins.

On Maurice Farman 411, Lieut. Longmore, R.N., with Capt. Salmond, 18, 13, and 15 mins. On Maurice Farman 418, Lieut. Boyle 11 and 10 mins.; Lieut. Marix 14 mins.; Lieut. Harvey 10 mins.; Lieut. Warter 6 mins.; Capt. Millar 6 mins. On Maurice Farman 425, Capt. Millar 15 mins.; Lieut. Conran 11 mins. On B.E. 416 Capt Salmond with Sergeant Mead 10 mins; Lieut. Soames 13 mins.; Lieut. Burroughs 15 mins.; Lieut. Arthur 20 mins. at 2,500 ft. On B.E. 417, Capt. Salmond 4 mins. alone. with Capt Macdonnall 32 mins, with Lieut. Dawes 12 mins.

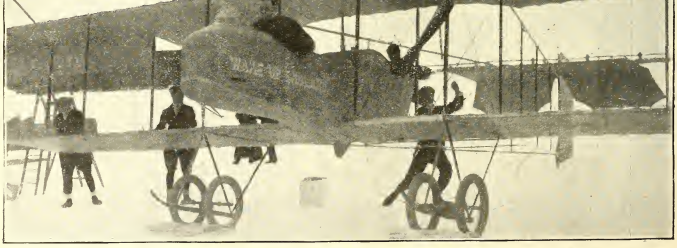
On Short biplane 401, Lieut. Roupell 13 mins.; Lieut. Bowhill 7 and 14 mins.; Major Gerrard, R.M.L.I., with Sergt. Vagg 22 mins.; Lieut. Unwin 7 mins.; On Henry Farman 420, Major Gerrard 9 mins. alone, with Sergt. Vagg 12 mins.



Air-Mechanic Collis, R.F.C., who took his certificate recently on a Maurice Farman at the Central Flying School. It will be noticed that he is wearing the new R.F.C. tunic, and the new badge of the Corps.

Lieut. Cholmondeley with Air Mechanic Strugnell arrived on Maurice Farman 214 from Lark Hill, returning later.

R.F.C., Larkhill.—Major Brooke-Popham out on 203 for two flights round the aerodrome for a few minutes the height of 2,000 feet in a gusty wind. Major Higgins afterwards took



Mr. Claude Grahame-White starting for a flight at S. Moritz.

over the machine, taking up as passengers A. M. Robins and Aylen. Both flights over 2,000 feet. Afterwards Major Higgins two flights alone, then gave A. M. Cox maiden flight. A. M. Geard for cross-country flight with Major Higgins from Larkhill to Andover, thence to Southampton and back. Time, 1 hour 10 minutes, and height 3,300 feet, in strong wind. The whole journey was done by memory. Lieut. Cholmondeley on Maurice Farman with Pilot Strugnell as passenger, after which with Sergt. Bruce for cross-country flight to Winchester and back. Time, 45 mins. there and 45 mins. back. Lieut. Anderson on Maurice Farman for 20 mins., after which he took up Lieut. Cholmondeley as passenger. Major Brooke-Popham out on 205 for three flights, the weather being rather bad for the pilot.

R.F.C., Farnborough.—Wind S.W., 15 to 20, clouds, with little sun at intervals. On Maurice Farman 215 Lieut. Waldron flew to Hounslow for lunch, found seam of petrol tank leaking on arrival and stayed there. Capt. Becke for short flights on Bristol-built B.E. 217, on B.E. 201, Capt. Longcroft for short flights at 300 ft.

Hendon.—At W. H. Ewen School, weather unfavourable. Mr. Lewis Turner on 60-h.p. Caudron in stiff wind.

At Blackburn School, test by Mr. Blackburn followed by Dr. Christie, straights for 30 mins.

Brooklands.—At Vickers School, in morning Major Cameron several good straights on No. 3 mono. showing good progress. Afterwards Mr. Barnwell testing No. 3 with speed indicator. In afternoon Messrs Barnwell and Knight doing circuits on No. 5 mono. at 2,000 ft.

At Bristol School, Mr. Merriam out early, flying round to wake pupils. Lieut. Crawford-Kehrmann doing clever circuits, followed by Mr. Lane. Lieut. Blatherwick couple of good straights, Mr. Bendall out alone. Weather too bad rest of day.

Salisbury Plain (Bristol School).—Mr. England out in afternoon, reaching 2,500 ft. in boisterous wind.

THURSDAY, February 6th.

R.F.C., Central Flying School.—Very misty early, clearing about 10 a.m., then freshening southerly wind, blowing gale during afternoon. On Avro 404, Capt. Fulton with an Air Mechanic on practice ground, 30 mins. On Avro 406, Air Mechanic Higginbottom with Sergt. Goodchild 15 mins. On Maurice Farman 418, Lieut. Marix 25 mins.; Lieut. Harvey 4 mins. On Maurice Farman 425, Lieut. Boyle 7 mins.;



Mr. Spratt, the new Chief Pilot of the Deperdussin School at Hendon.



Captain Halahan, late Royal Dublin Fusiliers, who has recently taken over the management of the Deperdussin School.

Capt. Millar 10 mins. On B.E. 416, Capt. Salmond with Sergt. Mead 30 mins.; Lieut. Arthur left school about 10.55 on this machine and, flying at good height for some time, got over Collingbourne, where he was forced to land owing to strong wind. In landing machine turned turtle, damaging it slightly. On B.E. 417, Lieut. Soames 14 mins. On Henry Farman 420, Capt. Tucker 12 mins., in landing, owing to strong wind, damaged machine.

R.F.C., Farnborough.—Wind S.W., 20 to 25 miles, some fog, and a little rain at times. On B.E. 204, staggered planes, Mr. de Havilland straights and circuits. On Maurice Farman 266, Lieut. Herbert with Lieut. Christie as passenger for 18 mins. at 800 ft., then taking Lieut. Gould for 21 mins. at 900 ft. On B.E. 201, Capt. Darbyshire 13 mins. at 500 ft., then Capt. Longcroft 17 mins. at 1,000 ft., again Capt. Darbyshire 7 mins. at 500 ft., after which Capt. Longcroft took Lieut. Christie for 14 mins. at 750 ft. On B.E. 206, Capt. Longcroft 12 mins. at 1,000 ft., Major Raleigh out on Bréguet 213 for 8 mins. at 400 ft.

Hendon.—At W. H. Ewen School, pupils out at 7.45 a.m. Mr. Lewis Turner test on 35 Caudron; then Lieut. M. W. Noel several straights; too much wind for circuits. Under M. Baumann, Messrs. Torr and Stewart making excellent progress in straights on monoplane No. 2.

At Graham-White School. Lieut. P. Small straights on No. 7 under Mr. Manton. M. Desoutter fine circuits on No. 6 mono. Mr. Lan-Davis rolling on 2B with Mr. Cheeseman. Mr. Bayetto rolling well on 4B mono. under Mr Cheeseman, and all other pupils practising.

At Blériot School, MM. Teulade and Gandillon circuits on No. 3, Mr. Williams rolling on No. 2.

Brooklands.—At Vickers School, after test by Mr. Knight, Major Cameron did straights on No. 3 mono., making heavy landing, buckling wheel and breaking skid and propeller.

At Bristol School, Mr. Merriam first up, then Mr. Bendall. Lieut. Crawford-Kehrmann for circuits and half-right turns, and later two excellent figures of eight. Mr. Lane also four good figures of eight. Mr. Merriam took Lieut. Blatherwick for instruction.

Salisbury Plain (Bristol School).—Mr. England out early, after which Lieut. Vaughan made excellent flight in strong wind. Mr. England tuition to Lieut. Merrick on biplane, reaching good height, and finishing with a glide. M. Jullerot took Major Merrick on an 80-h.p. mono, and whilst up thick fog covered Plain, but they made good landing.

FRIDAY, February 7th.

R.F.C., Central Flying School.—Gale blowing from south all day, at times registering 70 m.p.h.; no flying.

R.F.C., Farnborough.—Dull morning, wind south-west, 10 to 15 miles; drizzling rain. On 213 Bréguet, First-class Mechanics Jerrard, Ankrett, and Vaisey out rolling, each for 15 mins.; no other work on account of weather.

Hendon.—At W. H. Ewen School, pupils out at 7.45 a.m., Lieut. Noel making excellent progress. Mr. Lewis Turner doing exhibitions.

At Grahame-White School.—New pupil joined school, Mr. Birchenough.

At Blériot School.—M. Teulade straights on No. 3.

Brooklands.—At Bristol School, Mr. Bendall out with Lieut. Crawford-Kehrmann; pupil then doing figures of eight at 400 feet; Mr. Lane following in spite of strong wind. Both pupils out alone till stopped by weather later.

SATURDAY, February 8th.

R.F.C., Central Flying School.—Rather strong westerly wind during morning; wind dropped afternoon; bright and clear. Lieut. Cholmondeley on Maurice Farman 214 from Larkhill and returning later. Major Ashmore arrived from Farnborough on new Maurice Farman 428.

R.F.C., Farnborough.—Strong west wind 30 to 40 miles, very humpy; clouds. Mr. de Havilland for one circuit on B.E. 2, mechanics busy tuning up Bréguets, etc.

Hendon.—At W. H. Ewen School, during afternoon, Mr. Lewis Turner out on 35-h.p. Caudron, then Lieut. M. W. Noel passed first half of brevet test in excellent style. Later Lieut. Noel successfully completed tests for certificate, flying most of time at 300 feet. Mr. Lewis Turner also out making exhibition and passenger flights on 60-h.p. Caudron.

At Blackman School.—Exhibition flight by Mr. H. Blackburn, about 15 mins.

At Grahame-White School.—Messrs. Manton, Cheeseman, and Desoutter all flying splendidly. Mr. Gates doing quaint and clever trick flying, and Mr. Grahame-White a fine exhibition for first time since return from S. Moritz.

Brooklands.—At Vickers School, Mr. Barnwell testing new engine on No. 5. In afternoon Messrs. Barnwell and Knight out on No. 5.

At Bristol School.—Mr. Merriam up for test with Lieut. Blatherwick. Mr. Merriam exhibition flight in fairly strong wind, afterwards taking Mr. Archer. Mr. Bendall with Mr. Lane. Mr. Archer passed first part of his brevet test in fine style

Salisbury Plain (Bristol School).—Wind high. Mr. Harrison out alone for 10 mins. Mr. England took Mr. Ted for tuition in side-by-side, and Mr. Harrison took Capt. Landon in biplane. M. Julleroz out alone 10 mins. in 50-h.p. mono. Mr. Pixton with Major Merrick in biplane. Mr. England alone on a 50-h.p. tandem mono.

SUNDAY, February 9th.

Hendon.—At W. H. Ewen School, wind too high for pupils. M. Baumann out on 35 Caudron. Mr. Turner doing exhibitions.

Mr. Manton taking passengers, among them Miss Whitely. Messrs. Gates and Desoutter doing usual fine flying.

Brooklands.—At Bristol School, Mr. Merriam tests, but wind very bumpy. Lieut. Crawford-Kehrmann good straights, later Messrs. Merriam and Bendall out for getting-off and landing competitions, Mr. Merriam winning second place.

Another Chauviere Success.

The world's record for altitude with four passengers has been raised by the aviator Pierre Gougenheim, who rose to a height of 2,400 feet with four passengers on a Farman biplane at Etampes on February 8th. This machine was fitted with a Chauvière integral propeller.

Hydro-Aeroplane Accommodation.

The proprietors of the well-known Volk's Electric Railway at Brighton are now interesting themselves in aviation, and intimate that they will have available during the coming season, by kind permission of the Brighton Corporation, a large aeroplane shed and slipway on the beach at Brighton adjoining their Central Station and works. This is quite near the centre of the town, and is, in fact, on the same site used by Mr. Grahame-White in his successful waterplane tour last summer, on which occasion it proved most suitable for the purpose. The visit was then very successful so far as Brighton was concerned, people coming in this case from all over the country, and there was a big demand for passenger flights.

This shed will be available free of charge for anyone wishing to pay a "flying visit" to Brighton, and only a few hours' notice will be necessary to assure all being ready for the reception of the machine.

The proprietors are also willing to make arrangements with any well-known aviator or firm wishing to use the station for a more extended stay for the holding of exhibition and passenger carrying flights. In fact, it is their intention to organise a series of exhibitions throughout the season.

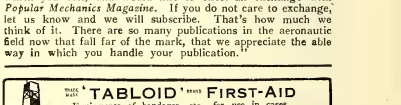
Mr. M. Hermann Volk, director of the firm, will be in town during the Show, and will be pleased to meet anyone who may be interested. Those wishing to make an appointment with him are invited to address letters to The Aeroplane, Stand No. 81, Olympia.

An Aero-Detective Manqué.

Herbert Repsold was a convict until he escaped from a Californian gaol last January, not that this matters very much to readers of The Aeroplane; the interesting feature of the incident is that Silas Christofferson—an aviator of note—went out in a hydro-aeroplane, accompanied by a passenger to look for him. While nosing about the coves and gullies of the marine shore they spied a man crouching suspiciously among some rocks. They swooped down into shallow water and challenged their victim, who complained bitterly that they had quite ruined his prospects of securing any duck that afternoon. To the best of one's knowledge Herbert is still at large.

"Experto Crede."

Mr. J. R. Quirk, editor of *Popular Mechanics Magazine*, Chicago, writes:—"We are very interested in the publication which you edit, and would like to effect an exchange with *Popular Mechanics Magazine*. If you do not care to exchange, let us know and we will subscribe. That's how much we think of it. There are so many publications in the aeronautic field now that fall far of the mark, that we appreciate the able way in which you handle your publication."



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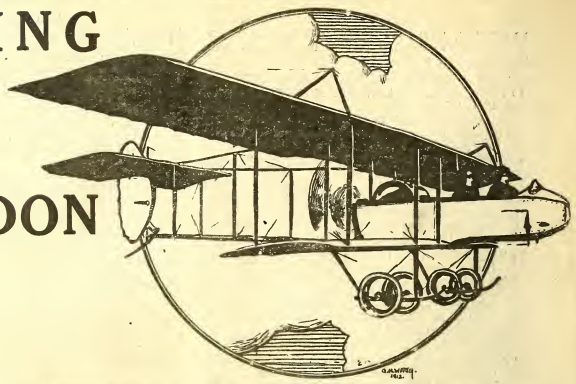
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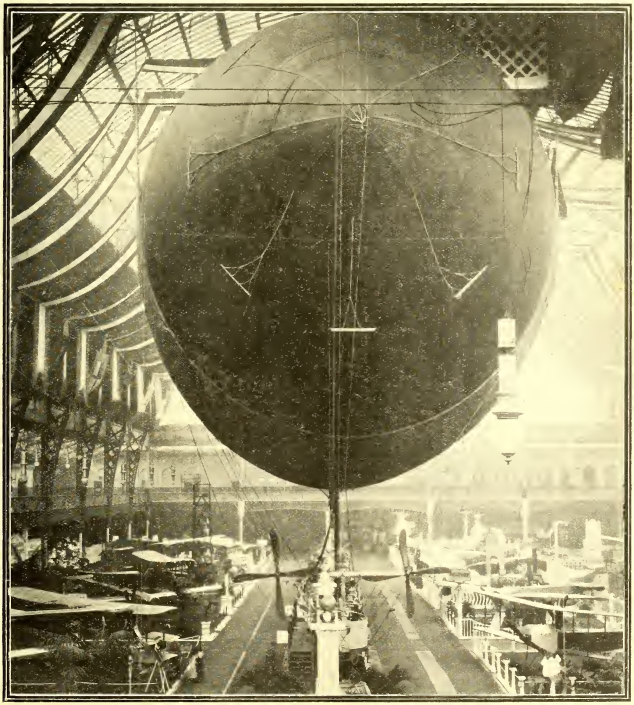
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1d WEEKLY

Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, FEBRUARY 20, 1913. No. 8.



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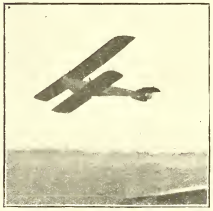
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The Finances of Aerial Defence.

At the inaugural lunch of the Olympia Show Mr. Hobhouse, M.P. recalled that £430,000 had been set down in this financial year for aeronautics. The Army grant alone was £308,000, and the rest was apparently made up by the Admiralty.

Many of his auditors took his statement to mean that £430,000 was the sum to be granted for the coming financial year, and some of them regarded it as a welcome increase on last year's amount. Mr. Hobhouse was presumably adding the Naval and Military grants of the current year.

It may be well, however, to show the futility of considering for a moment the adequacy of such a sum as £430,000 even for the Military Wing alone.

The prospect would not be alluring, either from the point of view of the personnel of the R.F.C., the aeroplane industry, or those intelligent members of the British public who realise the importance of an adequate aerial defence force. Mr. Hobhouse's subsequent pious assertion that the mastery of the air is as necessary as the mastery of the sea does not tally with his figures.

No one is going to do very much effective mastering with £430,000. If the whole sum was spent on aeroplanes we might procure about 500 of them, provided we did not indulge in the luxuries of 150-h.p. engines. If we did we should still be behind France on the same date, and probably behind Germany. If we spent it all on dirigibles we might, in a year's time, have a dozen of Zeppelin type, and still be merely on a level with Germany, but we should then be without aeroplanes, and without the numerous harbours for big dirigibles which Germany already possesses. But it must be remembered that this £430,000 has to provide not only for aeroplanes and dirigibles and their transport, but for new land for air-stations, sheds at these stations, extra pay for the R.F.C., premiums to officers taking their certificates at private schools, the Army's share of the Central Flying School expenses, and last, though far from least, for the salaries, aeroplanes, stores, and material at the Royal Aircraft Factory, so it is fairly evident that the sum would be ludicrously inadequate.

General Henderson's remark that he would rather take the field with a small flying corps efficiently organised than with a multitude of machines without organisation is, of course, technically incontrovertible, but when one is considering the question of aerial defence one is not concerned merely with our little Expeditionary Force—which is presumably to operate in "the Great War" as one of the French Army Corps. One has to consider the whole defence of a wealthy, thickly-populated, and extremely stupid country. If the people of the country cannot be induced to take an interest in aviation themselves they must be made to pay, in spite of themselves. If landed proprietors will not present land for military aerodromes, and if municipalities will not equip those aerodromes with sheds and other necessary buildings, as they do in France, then the country at large must be made to pay. And if all these things have to be bought the aviation grant in the Army Estimates must be big enough to pay for them.

£430,000 is about enough to equip our seven aeroplane squadrons with their eighty-four machines, and, say, fifty spare machines; to provide proper transport wagons and automobile repair shops; and to pay and maintain an adequate number of first-class pilots and mechanics, after allowing for continual training, with its attendant smashing and repairing of machines. Run on these lines, the eighty-four machines might conceivably be sufficient to provide a small and thoroughly efficient flying corps to operate with the Expeditionary Force. As even the skeleton of an imperial air service the number is not worth considering.

Airships.

It is rumoured that the Military Wing is to have no new dirigibles this year, and if that be so the £430,000 will naturally go further in equipping the corps with aeroplanes. But why should our one and only Airship and Kite Squadron be starved? Even as it is this squadron is treated badly enough. Pilots of dirigibles only draw "flying pay" when they go aloft, instead of drawing it every day, as aeroplane pilots do. As a natural consequence the trips of the military airships are as short as may be, so that when one of them is fit to go out as many officers and men as possible may be allowed to qualify for their little bit of extra pay. Also, I gather that of late officers are not appointed to the Airship Squadron unless they have first taken their aeroplane certificates. This seems quite unnecessary, though it may help to alleviate the rush for short trips to qualify for "flying pay." Quite possibly a man might be an excellent airship pilot and yet be, as an aeroplane pilot, a danger to himself and other people. Why not, therefore, if he be a useful airship pilot, pay him every day as the aviators are paid?

If we are going to have an airship squadron, for goodness sake let us have a sensible one. It is no use having little things like the "Gamma" and "Delta," except for training purposes. They are

quite good in their way, and against badly armed savages they would be quite useful, but if the airships are to be an effective force we must have something of the Zeppelin or Schülte-Lanz class. On the other hand, if, as seems probable, the big dirigibles are to be the affair of the Navy, let the fact be duly announced, and we shall know where we are.

A Typical Example.

War Office methods have never been better illustrated than by an incident which happened last week. A certain firm recently put on the market a new brand of castor oil for which exceptional purity is claimed. This oil was introduced simultaneously to the Admiralty and the War Office. Shortly afterwards came instructions from the Admiralty to send eighteen gallons to Eastchurch, where it would be put through the engines at once. Almost at the same time a portentous document arrived from the War Office ordering half a pint to be sent to the Royal Aircraft Factory to be tested. Naturally the Navy will know in a few days whether the stuff is good or not, and will either order more or say they do not want it. In the other case the precious half pint will go to an elaborate Government analytical department, and in a few months' time an official report will be issued on it. During that period the makers may wait patiently without knowing whether to produce the oil in quantities or not, and, if it meets with the approval of the R.A.F. authorities, per the eminent scientist who does the testing, they may be called upon suddenly for a large supply. If the supply is not forthcoming at the moment there will presumably be the usual sneers from the R.A.F. at the lack of enterprise of British firms.

This shows one of the thousands of ways in which one service spends money without attaining efficiency, while the other reaches a high pitch of efficiency with a minimum of expenditure. The men are equally good in either case, the difference is merely that ancient custom has decreed that the Army must always saddle itself with the encumbrance of civilian "experts," while the Navy relies on its own common sense and practical experience.

Wanted, a Programme.

What is wanted is a definite programme for the military side of aviation; a programme which may be insisted upon in the Press and in Parliament. Pressure of this kind has no effect on the Services themselves, who very rightly care nothing for Parliament or newspapers. But the aforementioned civilians who infest and hamper the Army in its various departments are peculiarly sensitive to public opinion, and by a regular campaign they may be made to move in the right direction, thus allowing the Army to acquire the equipment it wants so badly.

The Treasury is the first stumbling block. It is there that the requisitions sent in by the Army itself are cut and carved to fit the estimated revenue of the country without trenching upon money needed for the pet schemes of the moment in other directions, such as social improvements, salaries for M.P.s, universal insurance, and so forth—all things necessary in their way, but things that should be paid for out of the increasing wealth of the country, and not by cutting down the cost of the Army, which is, in fact, the most important form of national insurance.

After the Treasury come the civilians in the War Office itself, and then the civilian advisers on technical matters, such as the Aircraft Factory in the aerial branch of the Service. All these have to be urged to help instead of hinder the efficient equipment of the Army.

On January 3rd Mr. C. C. Turner set forth in the "Pall Mall" a definite programme for the expenditure of £3,000,000 in three years on aeronautics. He was laughed at for his pains, and told that his estimate for £800,000 this year was absurdly large. Since then some of the figures for the German Budget have appeared, and his figures begin to look very reasonable, if not small.

Briefly, he proposes to spend some of the money thus :—

Aeroplanes and hydro-aeroplanes (150) ...	£150,000
Six large airships (£25,000 each)	£150,000
Motor transport wagons and repair shops (200)	£70,000
One may add to this :—	
R.A.F. (as last year)	£85,000
	£455,000

There is more than the present estimate gone already, and yet the figures are not unreasonable. In addition, as Mr. Turner points out, we need six airship sheds; Hydrogen plant at each; Aeroplane sheds—at least another hundred; Establishment expenses for an adequately large flying corps; Subsidies to civilian aviators and aerodromes; Training expenses on a generous scale for pilots; a proper supply of spare parts.

Over and above all this Mr. Turner suggests the cost of permanent defences against aircraft should be included, but these rightly belong to the ordinary expenditure of the Services. Also money for special meteorological bureaux for the encouragement of aeronautical education, and for the work of the National Physical Laboratory should come out of separate Treasury grants, not from the Army or the Naval votes.

If it were the intention of the Admiralty to put in another £400,000 for aeronautics in the Naval Estimates all would be well, but it is hardly probable that much more than a quarter of that amount will be demanded. Consequently the £430,000 for the Army is inadequate, even if the airships are sacrificed bodily.

In any case, 150 aeroplanes is an insufficient number, even for the military wing and its seven squadrons—four of which are still unformed. There is no provision whatever for the home defence force of special reserve battalions and territorials, who would need very many more. Consequently the organisation needed is not for 150 aeroplanes, but for something very much nearer 500 in the next twelve months, apart altogether from the 200 or more needed for the Naval stations round the coast.

Parliamentary support is not lacking, fortunately, but the question is, will the outside Press, as representing public opinion, support the campaign for adequate aerial defence?—C. G. G.



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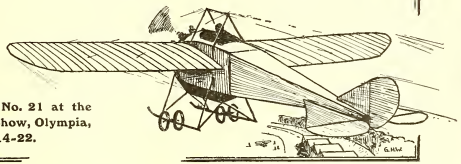
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The Central Flying School.

BY W. E. de B. WHITTAKER.

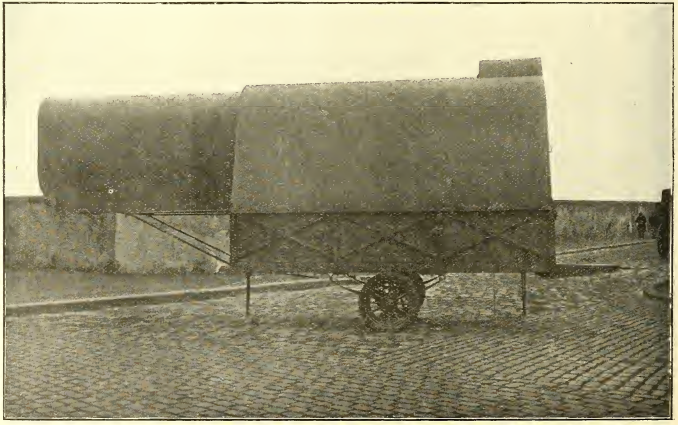
Throughout the period of history during which armies and navies have been separate organisations with different training and different ideals, operating together only on rare occasions, has it been accepted almost as an axiom that soldiers and sailors cannot work together as one body in personal amity, except in cases of national emergency. Every interest and aim in the two services are dissimilar, save the common duty of serving the King. The pay, the food, and the discipline vary greatly. A number of attempts have been made during recent years to develop combined action, but with disappointing results. There are many who consider it better policy to keep the Services separate, and to allow the spirit of rivalry to increase efficiency.

Bearing this dissimilarity of method in mind, it was, therefore a matter of great surprise when in the early months of last year the present Secretary of State for War outlined his scheme of organisation for the aviation service. The formation of a flying corps presented many difficulties in any case, without adding to the complications by making a joint corps with a personnel drawn from the Army, the Navy, and civil life. That a Central Flying School should be formed with a composite staff of soldiers and sailors to train a composite body of soldiers, sailors, and civilians was, in the view of many—myself included—to invite disaster. And yet all such critics were, it seems, entirely wrong.

There was an impression abroad that there was a considerable amount of friction between various members of the staff at the Central Flying School, that each branch of the Service considered itself in some way badly treated. Little questions of precedence were supposed to have made trouble. Nothing definite was stated, but the unpleasant rumours grew. The sources from which they emanated gave the bad impression an exaggerated value. One can only suppose that certain people have been deliberately misled.

The actual facts are entirely at variance with the rumours. There is no trouble beyond the ordinary disciplinary troubles inseparable from any newly-opened station in which the personnel is assembled from various units. Soldiers and sailors work together not only in a tolerant manner, but in one of great friendship. There is a general air of good feeling about the place which must of necessity be based on pleasant working conditions. A recent attack made on the school in a public print, inspired obviously by a misunderstanding of the real facts, and based on a too ready belief in the faith of certain critics, was entirely untrue, and was calculated to do an immeasurable amount of harm. Those who profess to lead public opinion in the ramifications of a science of which deep knowledge is confined to a few should be scrupulously careful in ascertaining the truth before making a statement. Destructive criticism is a matter of great ease, but when one destroys one should be prepared to offer a reasoned reconstruction. When it is obvious that no fundamental change can be made in the institution criticised, owing to the great expense or other reasons, then it is the duty of critics to help to make a success of what may in truth be a failure rather than damn it further.

The Central Flying School is an official department founded for the purpose of giving a higher education in the principles of military aviation to those aviators who have been selected for service in the Royal Flying Corps. Situated on Salisbury Plain, near Upavon, on ground not highly suitable as an aerodrome, it has as close neighbour the Cavalry School at Netheravon, a point which, considering the similarity of the more important of the duties of the aviator and cavalryman,



A "remorque," or trailer, designed by M. Cadel for the transport of aeroplanes. A brief description will be found elsewhere in the paper. In this case a Hanriot monoplane is on the trailer.

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may be of some practical value in the years to come. Where the land lay waste or under cultivation six months ago stand rows of hangars, workshops, and quarters. Natural obstructions have been removed, and the ground levelled so far as was possible. There is no aerodrome in the world which has grown in such a space of time to a similar stage of development.

The aeroplanes at the school are thirteen in number, and are divided into four flights, as follows :—

A. Flight. Captain Fulton, R.A. Two Avro biplanes (50 h.p. Gnome engines).

B. Flight. Lieutenant Longmore, R.N. Four Maurice Farman biplanes (70-h.p. Renault engines).

C. Flight. Captain Salmond. Two B.E. biplanes (50-h.p. Gnome engines) and one Maurice Farman.

D. Flight. Major Gerard R.M.L.I. One Henry Farman biplane (70-h.p. Gnome engine), two Short biplanes (70-h.p. Gnome engines), one Maurice Farman.

There are also several machines under repair and two Deperdussin monoplanes (one 65 Anzani and 70 h.p. Gnome engines).

There is a large and well-equipped workshop under Engineer-Lieutenant Randall, R.N. Each week the equipment in this shop is becoming nearer a complete state. All machines damaged in practice are repaired by the engineering staff. The factor of safety of the repairs is practically uniform in all work done. The engines used on the school aeroplanes are mostly kept in order by Lieutenant Randall and his staff when they cannot be repaired in the flights. Any defective part after being condemned is sawn in halves, so that in no case can any further use be made of it.

It is a revelation to those who have not seen them before to watch the naval E.R.A.'s at work. There is a clear undersanding of the technical side of the work in hand that is not common to all so-called engineers. If anything, the naval section are more in touch with their work than the army mechanics. There is, however, little difference, and clearly there is no ill-feeling. This latter fact is perhaps most important.

The aeroplanes of each flight are housed in large, well-built hangars arranged in two rows at right angles to one another. Each shed has a metal tray six feet in breadth running down the centre of the shed. This tray is an integral part of the floor, and serves to prevent oil, grease, and petrol from soaking into the boarding. It is more easily cleaned than is wood, and certainly adds considerably to the neatness of the shed.

Active work for the day so far as pupils are concerned begins at 6.45 a.m., at this time of the year, when those attached to each flight report at their respective sheds. Each new pupil is given a passenger flight by the instructor, in order that some indication may be obtained of his ability as a pilot. If he is sufficiently advanced he is permitted to make a solo flight lasting roughly half an hour. Novices, those who have never flown before, are taken on a disused gallop on the far side of the aerodrome and allowed to roll and make straight flights until they gain a little experience. Afterwards their training proceeds on ordinary lines.

Flying practice continues until twelve o'clock, when all pupils attend a lecture on some subject laid down in the course. This continues until one o'clock. After lunch flying, if the weather is suitable, continues until six o'clock. Dinner is at 7.30 p.m., and nothing further happens in the way of work, though much private reading is done in officers' rooms, until the following morning. Saturday from noon onwards and Sundays are both off-days.

The following is the staff at the Central Flying School, with dates of appointment (taken from the current Army List) :—

Commandant.—Paine, Capt. G. M., *M.V.O.*, R.N., May 15th, 1912.

Secretary.—Lidderdale, Asst. Paymr. J. H., R.N., May 15th, 1912.

Medical Officer.—Lithgow, Capt. E. G. R., R.A.M.C.

Quarter-Master.—R.C. Kirby, Hon. Lt. F. H., Qr. Mr., *hon. lt.*, April 26th, 1912.

Instructor in Theory and Construction.—Cook, Lt.-Col. H. R., R.A. (L), May 20th, 1912.

Instructor in Meteorology.—

Instructors in Flying (graded as Squadron Commanders.—Longmore, Lt. A. M., R.N., May 15th, 1912. Gerrard, Capt. *(temp. Maj.)* E. L., R. Mar., May 15th, 1912. Fulton, Capt. J. D. B., R.A. (L), May 20th, 1912. Trenchard, Bt. Maj. H. M., *D.S.O.*, R. Sc. Fus., October 1st, 1912.

Instructor in Flying (graded as Flight Commander).—Salmond, Capt. J. M., R. Lanc. R., November 12th, 1912.

Inspector of Engines.—Randall, Eng. Lt. C. R. J., R.N., May 15th, 1912.

Naval and Military Aeronautics.

GREAT BRITAIN.

Royal Flying Corps—Flying Badge.—His Majesty the King has been pleased to approve of a flying badge, to be made of gilt metal, fastening with a brooch-pin for full dress, and to be of embroidery on blue cloth for service dress. It will be worn on the left breast above any medals or decorations, by—

(a) All military officers of the Royal Flying Corps as long as they remain efficient aeroplane pilots, or, in the case of airship pilots, provided they are qualified as aeroplane pilots and remain efficient as airship pilots.

(b) All non-commissioned officers and men of the Military Wing, Royal Flying Corps, or of the military establishment of the Central Flying School as long as they remain efficient as first or second class aeroplane pilots.

(N.B.—It is to be noted that the badge is only to be worn by qualified officers and men.)

On Thursday afternoon last, five biplanes, three Maurice Farmans and two B.E.'s, all Renault-engined, set off from Farnborough on the first stage of the Montrose adventure. Captain Longcroft led the way at 2.30 p.m. on a B.E., after him at short intervals came Lieut. P. W. L. Herbert, Sherwood Foresters; Capt. G. W. P. Dawes, Royal Berks; Lieut. F. F. Waldron, 19th Hussars, and Capt. J. H. W. Becke, Sherwood Foresters, who is in charge of the flight. All are first-class pilots. Towcester was the first objective, the original route being altered on account of fog in the Thames valley. The pilots were unaccompanied by passengers. A fleet of cars and motor lorries followed by road equipped with tools, spares, and stores. This was under the charge of Lieut. H. P. Atkinson, R.A. The landing places proposed are Towcester, Newark, York, Newcastle, and Edinburgh.

Three machines came down at Reading; the others returned to Farnborough, owing to fog.

This migration of a squadron to Scotland is part of the system according to which the R.F.C. is being developed. From their preliminary training at the Central Flying School, at Upavon, it is intended that the military pilots shall pass to Farnborough, where their training is carried further, and the squadrons formed. As each squadron completes its training, it is to be despatched by air to its permanent post; Montrose being the first of these stations to be formed away from headquarters.

The flight of No. 2 Squadron, Royal Flying Corps, was continued on February 17th, despite a very high wind. Captains Becke and Dawes and Lieutenant Herbert left Reading about 9 a.m., and Captain Longcroft and Lieutenant Waldron left Farnborough some two hours later. Captain Becke arrived at Towcester at 2 p.m., after one stop for petrol at Blakesley. One other pilot landed at Moreton-in-the-Marsh, one at Aylesbury, and Captain Longcroft and Lieutenant Waldron at Oxford.

FRANCE.

Lieutenant Aviator Magnien, of the Oujdja aviation centre in Morocco, flew, on February 10th, from that place to Taouiert

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He was flying a 50 h.p. Gnome-engined Deperdussin monoplane, and left Oujda at 3.30 p.m., and arrived at his destination at 6 p.m., having covered 200 kilometres in two hours and a-half.

The officials making an inquiry into the present state of the aviation section of the French Army, visited the military aviation centre at Reims, at which post are stationed forty aeroplanes.

Captain Destouche and Captain Cammerman officially accepted, on February 10th, after the reception tests, a new type single-seated Deperdussin monoplane (50-h.p. Rhône rotary motor). In this type the pilot sits well forward and has an extended range of vision.

During garrison manœuvres at Toul, on February 10th, Quartermaster Guiton made an extended flight over the troops in a Henry Farman biplane. The weather was most unfavourable.

Lieutenant Aviator Kreyder, of the aviation centre at Camp d'Avor, on February 11th, flew from that place to Saint-Bénin-d'Azy (Nievre), in order to lunch with a friend. Later he returned to his base, having down the 200 kilometres out and back without any trouble.

Lieutenant Aviator Lalanne, of the Maubeuge Escadrille, during training this week, followed in a Deperdussin monoplane (50-h.p. Gnome) the dirigible "Dupuy de Lôme," and figuratively put it out of action.

On February 11th, at Etampes, in the presence of Captain Destouches, Mm. Espanet and Crobé flew four 100-h.p. Gnome-engined Nieuport monoplanes through the official acceptance tests for the French Army. Espanet on one of them with 7 cwt. 97 lbs. useful load, rose to a height of 1,600 feet in three minutes.

The same day Captain Aviator Saint Quentin and Lieutenant Aviator Sallier passed, on Maurice Farman biplanes, their tests for the superior military brevet. The former flew over the circuit Buc-Chateaurenault-Buc, and the latter Buc-Camp de Mailly-Buc. M. Lemaître, on a Henry Farman biplane, passed the first test for the military brevet by an hour's flight at 2,500 feet at Etampes. Sergeant Chatelain, on a Henry Farman biplane, passed his last test by a flight over the circuit Etampes-Camp de Mailly-Camp de Sissonne, Camp de Chalons.

GERMANY.

During the déjeuner following the betrothal of H.R.H. the Princess Victoria-Louise of Prussia to H.R.H. the Prince Ernest Augustus of Cumberland, Duke of Brunswick-Luneberg, etc., the military dirigible Z.3. flew above the Chateau at Carlsruhe.—W.

Although the Albatros biplane "West-Preussen," which came to so grievous an end at the Putzig naval aviation station on February 7th was fished up soon after the catastrophe, the bodies of the two aviators had not been found at the time of writing. Divers were let down to search for Lieutenant Jenetzky and the mate, but it is believed the current has carried the men away to Zealand. The "West Preussen" accomplished its first cross-country flight on February 3rd only, when Jenetzky, then accompanied by a sailor named Buschke, crossed the bay to Danzig and returned home again, the apparatus proving capable of a speed of sixty kilometres an hour. It was fitted with a 100-h.p. Argus motor.—B.

An accident not dissimilar to that which befell the German naval Albatros biplane at Putzig, but happily without any fatal results, occurred near Berlin last week, when Naval Lieutenant Bertram and the Austrian pilot, Sablatnig, fell into the Havel. Sablatnig was testing a new A.E.G. biplane bought by the War Office and had Lieutenant Bertram, himself a well-known aviator as a passenger. The machine flew down the Havel river, which forms a number of large lakes in its course, and was just crossing Heiligensee at an altitude of 560 metres when a main stay gave way and forced Sablatnig to a rapid descent. The machine commenced to overbalance, and to right it Lieutenant Bertram accomplished the daring deed of climbing on to the right wing, where he stayed during the horribly swift journey downwards. Sablatnig headed for the water in a glide without the motor working, then, in passing over a cluster of buildings, he restarted the engine and managed to alight in a stretch of open water. Bertram was thrown off the aeroplane head first into the river, and Sablatnig dived to save his stunned passenger from drowning. Both men were rescued and taken home in motor cars, their injuries being comparatively slight.—B

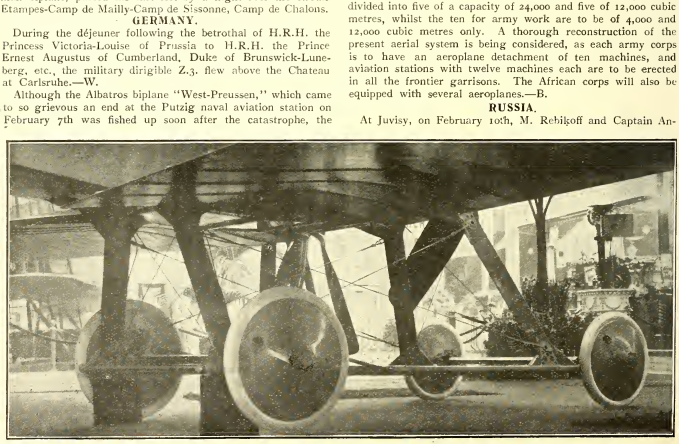
ITALY.

On February 10th, at Spezia, M. Paulhan, in the presence of many naval officers, flew a Paulhan-Curtiss hydro-biplane through all the tests imposed by the navy. Delivery was made later in the day.—W.

Italy is making strenuous exertions to bring its aerial fleet up to a pitch meeting all requirements, and trusts to have 20 dirigibles and 220 aeroplanes before the year is out. Of the twenty cruisers ten will be apportioned to the navy, being divided into five of a capacity of 24,000 and five of 12,000 cubic metres, whilst the ten for army work are to be of 4,000 and 12,000 cubic metres only. A thorough reconstruction of the present aerial system is being considered, as each army corps is to have an aeroplane detachment of ten machines, and aviation stations with twelve machines each are to be erected in all the frontier garrisons. The African corps will also be equipped with several aeroplanes.—B.

RUSSIA.

At Juvisy, on February 10th, M. Rebikoff and Captain An-



Landing chassis of the Bristol Biplane. Note the brake drums and the steel-tube skids.

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dreadi observed the reception tests, and accepted a Brageas monoplane (Anzani motor) for the Russian army.

GREECE.

M. Guinard, the French aviator, who has recently been piloting the Astra hydro-biplane for the Greek navy, has now returned to Paris. He states that during his time in Greece he made several reconnaisances over the Ægean Sea. On one occasion, while flying with a Greek officer as passenger, his engine stopped and forced him to alight on the water. A heavy sea was running, and the back float was broken away almost immediately after touching. He and his passenger had to remain on the aeroplane, with its tail under water, for two hours before being rescued.

BULGARIA.

The Prince George Bibesco has ordered six Blériot monoplanes (80-h.p. Gnome engines) of the tandem two-seated type. Three machines of this type, but with engines of 70 h.p., are at present in use in the Bulgarian army.

SERVIA.

M. Jules Vedrines, on February 9th, made several flights at Nisch on an 80-h.p. Gnome-engined Deperdussin monoplane, taking in turn several officers of high rank as passengers.

M. Godefroy, on the same day, put two Deperdussin monoplanes through reception tests at Nisch for the Servian Army.

TURKEY.

The Turkish Aviation Corps is evidently not quite extinct, as there are reports of extended reconnaissances being made in front of the Chatalja lines by four Turkish aeroplanes.

FOREIGN NOTES.

France.

M. Pierre Gougenheim, not content with having broken the height record with four passengers last week, has now broken it again. Accompanied by four friends—pupils at the Farman School—he left ground at Etampes on a Henry Farman biplane (80 -h.p. Gnome) on February 10th, at 3.40 p.m. At 4.48 p.m. he had reached a height of 1,120 metres (3,674 feet). He then stopped his motor and descended in a spiral glide.

Hearing that Gougenheim was about to make the above attempt, M. Guillaux, accompanied by M. Max Bruyère left Issy les Moulineaux on a Clement Bayard monoplane early in the afternoon. The journey to Etampes took exactly thirty minutes.

Messrs. Devienne and Scoffier are flying on the Riviera day by day. Their Deperdussin hydro-monoplanes are proving quite satisfactory On February 10th, Devienne took Lieutenant Aviator Wilermoz from Antibes to Cannes, to the latter's great content.

Records are appearing like the flowers in spring. First Gougenheim and now M. Maurice Guillaux have altered the figures of stated feats. On February 11th, at Etampes, M. Guillaux with M. Max Bruyère as passenger, on a Clement Bayard monoplane (70-h.p. Gnome engine) started to fly at noon, and finished at 4.6 p.m. He has thus broken all records of speed and duration of flight with a passenger. The following are the new figures:

	h	m	s
100 kilometres in	1	2	10
200 ,, ,, ...	2	4	27
257 ,, ,, ...	2	34	18
300 ,, ,, ...	3	4	5
350 ,, ,, ...	3	34	46
400 ,, ,, ...	4	4	4
410 ,, ,, ...	4	10	46

And

Two hours	191 kil. 900.
Three hours	291 kil. 900.
Four hours	391 kil. 900.

The regularity of his times is a tribute to his consistent flying.

Mr. Poumet, flying an illuminated Borel monoplane, flew for twenty minutes over the streets of Paris on February 11th, after dusk had fallen. At the conclusion of his flight he landed at Issy les Moulineaux, guided by petrol fires.

Germany.

The route of the Prince Henry Circuit, 1913, known previously as Upper-Rhenian Circuit, has now been fixed definitely. The event commences on May 10th at Wiesbaden with the taking off of all the aeroplanes not owned by the army. On May 11th the start is made for Cassel with an intermediary landing at Giessen, 165 kilometres in all; May 12th, Cassel—Coblenz, 170 kilometres. May 13th, rest day at Coblenz; May 14th, Coblenz—Karlsruhe, 200 kilometres; May 15th, rest day at Karlsruhe; May 16th, Karlsruhe—Strassburg; May 17th, Strassburg—Freiburg—Strassburg. Scouting manœuvres are to be held on the two last days. All the aeroplanes must be of German make, but no restrictions are made as to the engines. The German Emperor and his brother, Prince Henry, have both offered handsome trophies for the contest, which will be carried out on purely military lines.

Prince Siegismund of Prussia, a nephew of the German Emperor, who is an enthusiastic designer and constructor, has engaged Krieger to pilot the monoplane built by the Prince last year at his workshops. At present H.R.H. is engaged on a racing machine which is to take part in all the big events with Krieger at the helm, and will be fitted with a 100-h.p. Mercédès motor.

A hydroplane week is to take place in Germany from July 8th to 13th, Lake Constance having been chosen as the most suitable spot. The chief event will be the Lake Constance Grand Prize, with 70,000 marks in prizes for a speed and reliability test of 200 kilometres, about 160 miles.

Faller of Mulhouse has added a fifth world's record to those gained by him already, as he flew for 1 hr. 10 mins. 17 secs. on February 9th, with five passengers, thereby beating Molla's performance by a margin of four minutes. Of the six world's records in aviation against German names Faller holds the lion's share.—B.

Aeroplane Transport.

A trailer or "remorque" for the transport of aeroplanes has recently been designed, and put on the market by M. O. Cadel. It consists of a steel chassis attached by half-elliptic springs to two wheels shod with pneumatic tyres. At each corner are folding steel legs, which, when let down, maintain the balance of the "remorque." Attachments are made so that it can be drawn by either horses or a motor tractor. The general idea will best be understood by a study of the photograph on page 194. The design of the "remorque" is altered to suit varying types of aeroplanes.

The New Bristol Hydroplane.

It is interesting to note that the Bristol hydro-biplane constructed for the Admiralty has recently been making highly successful flights from the River Medina at Cowes. The machine has been housed in the shed belonging to Mr. Sopwith about a mile and a half up river. One gathers that it rises very quickly from the water and flies very strongly. Mr. Harry Busteed has been piloting the machine and expresses himself as being highly pleased with its behaviour.

The Royal Aero Club.

In accordance with the rules, the Committee shall consist of eighteen members. Members are elected to serve for two years, half the Committee retire annually.

The retiring members of the Committee are:—

Griffith Brewer.	Prof. A. K. Huntington.
Capt. Bertram Dickson, R.F.A.	F. K. McClean.
John D. Dunville.	Alec Ogilvie.
Col. H. C. L. Holden, C.B., F.R.S.	Mervyn O'Gorman.
	C. F. Pollock.

Any two members of the Club can nominate a member to serve on the Committee, having perviously obtained such member's consent. The name of such member so nominated, with the names of his proposer and seconder, must be sent to the Secretary in writing not less than fourteen days before the Annual General Meeting. Wednesday, March 5th, is the last day for the receipt of nominations.

The following members have so far been nominated:—

Griffith Brewer.	F. K. McClean.
Ernest C. Bucknall.	M. O'Gorman.
Col. H. C. L. Holden, C.B.,	C. F. Pollock.

Members are reminded that a ballot paper for the election of nine candidates to seats on the Committee of the Club will be forwarded to them at least seven days before the date of the Annual General Meeting.

"CONTINUITY OF SERVICE."

A B C

AERO ENGINES

45, 80 & 110 H.P.

ALL STEEL "V" TYPE

An A.B.C. Aero Engine holds the British Duration Record with a Non-stop Flight of **8** hours **23** mins.

WINNER OF THE MICHELIN ENDURANCE COMPETITION FOR GREAT BRITAIN, 1912

THE ALL BRITISH ENGINE CO., LTD.

Brooklands, Weybridge, Surrey.

THE OLYMPIA AERO-SHOW.

This report does not set out to be a scientific disquisition on the merits or demerits of the aeroplanes, engines, and accessories at Olympia; it is merely a description, from the point of view of the practical man for the benefit of other practical men, of what is to be seen.

On the whole, the show is devoid of novelty, but, all the same, it is by far the most interesting show ever held in this country, for the British machines for the first time are able to hold their own with the French machines, not only in workmanship—which they have always done—but in flying ability, as has been proved by many machines similar to those in the Show. At the same time the French machines are a great improvement on any seen previously in this country.

The Inaugural Lunch.

The Show opened officially with an inaugural lunch on Friday. To have eaten a man's bread and salt, or, in its modern form, his "caille en casserole," is supposed to guarantee eternal peace between host and guest, therefore it is doubtless bad manners for the writer to criticise his hosts, the Society of Motor Manufacturers and Traders. However, the average motor manufacturer himself is not generally possessed of the manners of a Chesterfield, so perhaps on this occasion one may be permitted to assume that two wrongs make a right.

In the first place, the donors of the feast seem to have forgotten to remember that the motor trade has done rather less than nothing for aviation, when it might have done a great deal, and that the "big men" among aeroplane constructors have little or nothing to do with motor making. Consequently one could not help being struck by the absence of such pioneers of British aviation as Messrs. Cody, Roe, Sopwith, Howard Wright, and others, whose places were filled by "back numbers" of the motor trade, who never appear in connection with aviation except when there is a chance of their names being noted by the "motoring and airmanship experts" of the daily Press among those "also present."

A number of officers of the Royal Flying Corps, representing the War Office, the Naval and Military Wings, and the Central Flying School, were among the honoured guests, and one would have expected that a special effort would have been made to afford them an opportunity of meeting as many as possible of the responsible heads of the firms making the machines on which their lives depend. As it was the idea seemed to be to give an assortment of motormongers a chance of eating a wholly excellent lunch, hearing two or three excellent speakers, and patronising an infant industry which they have in no wise assisted.

The mere men who were the foundation of the Show, the poor aeroplane makers, who had to pay high prices for space which the wealthy S.M.M. and T. could well have afforded to give them as an encouragement to a national necessity, were not invited to take any part in the inaugural proceedings.

Motor Manners.

When the time for toasts arrived one could not help being surprised at a man of the chairman's experience forgetting the order of precedence of the Services, an error fortunately put right by the toastmaster. Also, though one may cordially agree with the chairman's witty remark that while France had specialised in aeroplanes and Germany in dirigibles, this country had "specialised in delay," it was scarcely what one would say in public before officers of the Services attacked, for even though one might know their private opinions to agree with those of the speaker, their first duty is to their Services, while their position as guests prevents their replying as tersely as the occasion would warrant, a limitation which, fortunately, does not apply to the mere journalist.

Also, when the big firms in the motor trade devote some of their vast profits to the advancement of a science and industry which is necessary for the protection of their gotten gains it will be quite time enough for the members of that trade to start criticising the actions of a Government and a Service which is doing its best, be it in never so muddle-headed a manner. Even the Royal Aircraft Factory has done more for aviation than has the motor trade, so the less the latter says on the subject of delay and the sooner it starts to take an intelligent and financial interest in aviation the better.

The chairman got off one or two rather neat points, as when he mentioned that the public should recognise the national importance of aviation rather than be inspired by a morbid curiosity about the inventive genius displayed in designing machines in which others kill themselves with unpleasant frequency. He also acknowledged the excellence of the organisation of the Royal Flying Corps.

Mr. C. E. Hobhouse, M.P., Chancellor of the Duchy of Lancaster, put forward the good old theory that by waiting and seeing we were enabled to take the fullest advantage of the ingenuity of others—a typically English view—whereon he was asked by "a voice," "What if war broke out?" He remarked that the motor trade, although behind at first, had caught up its foreign competitors, and was promptly told by many voices, "It hasn't," and "It isn't a means of defence." Then he announced that the financial estimates this year had included £430,000 for aviation, and was interrupted by cries of "Not nearly enough!" "What's it for—to buy fields?" All of which remarks were apposite enough, and would have been excellent at a political meeting, but were scarcely good form as interruptions from the hosts of the day to a guest's speech. True, Mr. Hobhouse is only a Liberal politician, and may therefore, in the eyes of many wealthy motormongers, not be entitled to ordinary courtesy, but he is a well-meaning man, and may be pardoned for losing his temper on this occasion.

However, he delivered himself of the excellent sentiment that the mastery of the air is as necessary to this country as is the mastery of the sea, and one only hopes that the permanent officials at the Treasury, who incidentally are Conservatives to a man, will agree with him and realise the absurdity of £430,000 as a supposedly adequate sum for military aviation. Mr. Hobhouse also suggested that the S.M.M. and T. should raise a memorial to those who had been killed flying in the service of the country.

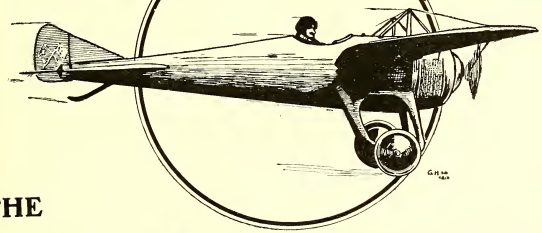
As suggestions are the order of the day, one might suggest that the memorial should take the form of a £1,000 prize annually for five years for the best performance on a machine which is inherently stable, no use to be made of the controls except elevator and rudder after reaching a height of 100 feet and until that height is again reached. The pilot to be made to carry a member of the Aero Committee of the S.M.M. and T. as official observer on these tests. They would possibly increase the combined knowledge of that committee on the subject of flying.

Captain Godfrey Paine, R.N., M.V.O., bore witness to the excellent feeling between the Navy and Army at the Central Flying School, and said that officers, non-commissioned officers, and men of all branches of both services were keenly imbued with the one idea of our aerial forces occupying the first place in the world.

Brigadier-General David Henderson, C.B., D.S.O., said the Services and the industry depended very much on one another. The Services looked to the constructors for new inventions, and the constructors

The British-Built Deperdussin

Olympia — Stand 52



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OVER **105** MILES PER HOUR.

WINNER of the GORDON-BENNETT CUP, 1912.

1st VEDRINES, 2nd PREVOST.

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AT SALISBURY PLAIN, 1912,

THE DEPERDUSSIN MONOPLANES WON £2,500,

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NEW MONO-COQUE HYDRO-AEROPLANE

AT OLYMPIA.

THE BRITISH DEPERDUSSIN AEROPLANE COMPANY, LTD.

39 VICTORIA STREET, S.W.

looked to the Navy and Army as their best customers. He gathered they were not such good customers as they might be. He would much rather take the field with a small corps efficiently organised than with a multitude of machines without organisation. The lack of British engines was a serious matter.

The King's Visit.

The visit of His Majesty King George V. fortunately prevented further speechmaking, for after Captain Paine and General Henderson no one wanted to hear the typical motor-trade after-food speech. The King was conducted round the Show by sundry notabilities of the motor trade, the absence of those of note in connection with aviation being somewhat marked. In consequence His Majesty missed seeing some of the most interesting machines. In one case his attention was only drawn to one of the outstanding features of the Show by the personal intervention of a very distinguished officer who had grown old in the service of Queen Victoria, and is now devoting the evening of his days and his personal means to the building up of a new arm for the country's defence.

In visiting the stands the King conversed amiably with the principal of each firm, and, one gathers, showed quite an intelligent appreciation of the points of the various machines. To say that he "displayed the knowledge of an expert" is the usual fulsome fiction, common to the daily Press, which is ladled out with the mistaken idea of inspiring respect and loyalty. To say that His Majesty possesses a sound working idea of the uses of an aeroplane is the plain truth, and that is vastly more than one can say of the great majority of his subjects, even in the highest class. His possession of so much knowledge is a happy circumstance for the future of aviation.

The First Day.

Friday evening scarcely counts as part of the Show, and Saturday was really the first day. In the morning there was a fair sprinkling of people, many of them being N.C.O.s and men of the R.F.C., who had come up from Eastchurch, Upavon, and Farnborough as the guests of the Royal Aero Club, and were entertained to lunch. Arrangements had been made to hand to each of these visitors a complimentary copy of THE AEROPLANE, but the idea collapsed because apparently every man in the corps had read the paper before he arrived.

At the lunch Mr. Harold Perrin told the R.F.C. men in his usual breezy way what fine fellows they were, and Sergeant Squire retaliated gracefully. Be it said, some of the technical questions asked by the R.F.C. had quite a crushing effect on the attendants at some of the stands, for bitter experience of getting at inaccessible nuts and bolts and of trying to induce vagrant parts to "stay put" has made keen critics of some of our soldier mechanics. Several of them were old familiar faces from the aerodromes, and it is interesting to note that notwithstanding the sneers of superior persons at aerodrome mechanics, some of the N.C.O.s and men of the R.F.C. who were civilians a few months ago look much more soldierly than the soldiers who have become mechanics via the old Balloon Corps and the R.A.F.

In the evening there was quite a goodly crowd, despite the blackness outside—nearly as many people, in fact, as on an "off day" at the Paris Show. The majority of them were intelligent mechanics or schoolboys, who knew all about it, and waggled any reachable control levers with enthusiasm. In a week's time we shall know more about the mental attitude of the Great British Public.—C. G. G.

THE WAR OFFICE (Whitehall, S.W.).

His Majesty's Airship "Delta" occupies the centre portion of the hall, and causes a great deal of interest, the car being placed near the floor with a raised staging beside it along which people can pass and obtain a view of the various mechanisms in the car. As the engines are about four years old, and there is nothing startlingly original about the rest of the machinery, there is naturally no particular objection and visitors of all nationalities gaining all the knowledge they can from it. The most valuable part of the mechanism, namely, the wireless apparatus, was very thoughtfully removed beforehand.

The whole car seems very neatly arranged, and there are several ingenious little points in the control of clutches, engine, brakes and so forth. The bevel gears driving from the engine shafts to the upright shaft and thence to the propellers have evidently been beautifully made, for it is possible to turn the propellers round by hand by twisting the upright shaft, showing that practically no power is absorbed in transmission losses. The angle of the propellers, which is variable on the principle patented by Mr. E. T. Willows, is controlled by a small wheel alongside the pilot's seat and the nose of the car.

When contemplating the "Delta" one is struck by the fact that underneath the nose of the envelope is painted in large letters "H.M.A. Delta," with the letters "R.A.F." underneath. One does not recollect, in naval practice at any rate, that his Majesty's ships once they have been taken over by the Service bear the advertisement of any civilian department which may have built them. Still, of course, the Air Service does indulge in unconventional habits at times. A similar peculiarity in lettering is observable on the copy of "B.E.2," which is said to be built of spare parts.

"Mark B.E.2"

Since the formation of a military air corps some years ago, the Royal Aircraft Factory (late balloon factory), a Government department concerned with the carrying out of practical experiments in aeronautics has given a goodly proportion of its time to the design of aeroplanes. The first type of these to reach a singular degree of success is that shown on the Army stand at Olympia. The original biplane of the type was known as B.E.2, and under the hand of Mr. de Havilland it has made for itself an enviable reputation. It has done much to set a standard of performance for other machines. The English height record (10,560 feet) with a passenger stands to its credit, and for all-round efficiency it is unbeaten either at home or abroad. That is to say there are in existence faster machines, better climbers, better wind fighters, more suitable observation aeroplanes, but none combine a higher average in all.

The critics say it shows traces of the designs of others, that its planes owe much to Blériot, that Farman or Somner forestalled its landing carriage, that the Nieuport tail is not dissimilar, and so on. In answer one would ask those critics to point out an entirely original machine capable of flying. I have myself seen aeroplanes of startling originality, so original that their true place was not in aeronautics but in a museum, for by no means known to the ingenuity of man could they be made to fly. It is to the credit of any that they can so combine all the good features of a series of aeroplanes into one model that in practice it may possess the virtues of all and the faults of none.

The B.E.2a. is a tractor biplane of the general type, introduced by M. Brégueт in France and Mr. Roe in England. Its motive power is a 70-h.p. eight-cylinder Renault engine, driving a four-bladed propeller of "Factory" construction. The fuselage is encased and stream-lined on top from the back of the pilot's seat. The passenger has no special protection save a wind screen. The control is by single lever operating the elevator, and the warp and a rudder bar. In front of the pilot is a dashboard bearing on it a case containing an aneroid, inclinometer, clock, and other fittings. The speed indicator fitted is of Factory design and works with a high degree of precision.

The engine has on it a silencer which, according to report, is quite effectual. All the struts throughout the machine are carefully stream-lined. The tail, which has a large fixed surface, is slightly cambered.

. . THE . .

Gnome Engine Co.

Sole Representatives for the

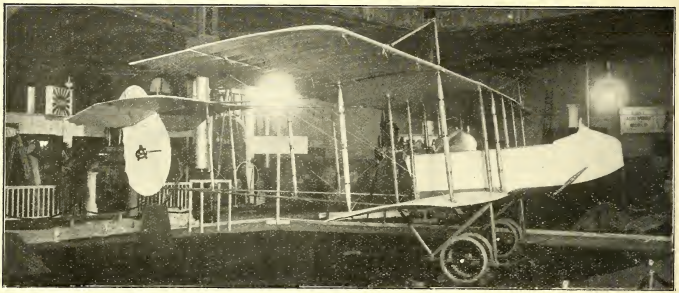
: : CELEBRATED : :

GNOME

AVIATION ENGINES

30 STAND 30

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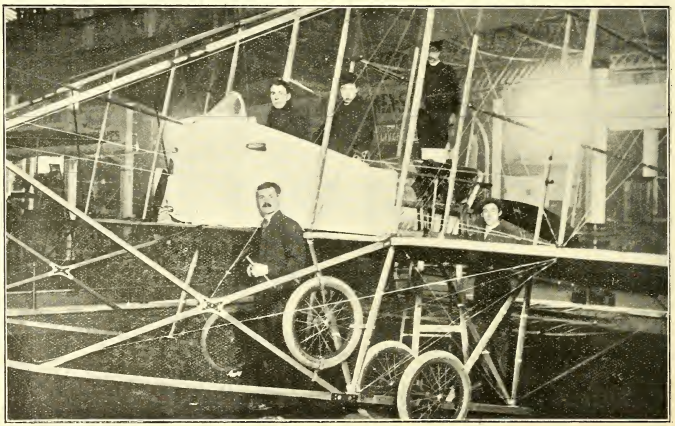
The Henry Farman ready for the opening of the Show.

THE AIRCRAFT COMPANY (47, Victoria Street, Westminster, S.W.).

The Aircraft Company have one of the largest stands in the Show whereon to display three main exhibits—a Maurice Farman biplane, a Henry Farman biplane, and a motor repair van. Aeroplanes built by the Farman brothers have, apart from the attraction due to their practical efficiency, an historical interest to those who have in any way followed the story of aviation. None of these can look at the machines on this stand and think of how certainly and easily they will fly and fulfil their destined purpose, without recalling the splendid experimental work of the brothers in the almost pre-historic days of four and five years ago. Then it was a matter of amazement that an aeroplane should fly at all; now surprise would follow any failure to fly on the part of even a newly designed machine. Then a smash was a certain element of the day's work; now even insurance companies will accept the risk at a premium which proves the advance of the science.

One sign of advance in the aviation industry, as in the motor trade, is the disappearance of the habit of bringing forth an entirely new design at each annual show. Neither of the Farman biplanes exhibited differ in essentials from the types which flew so successfully last year. Detail work is altered, a higher degree of finish is obtained, greater comfort is ensured for pilot and passenger; but aerodynamically the machines are practically the same.

The Maurice Farman biplane (70-h.p. eight-cylinder Renault engine) is similar to those supplied recently to his Majesty's

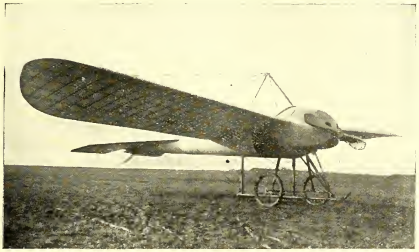


Assembling the Maurice Farman.—Note the spare wheel for touring.

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As supplied to the WAR OFFICE, The FRENCH, ITALIAN, RUSSIAN, BULGARIAN, RUMANIAN GOVERNMENTS, &c.



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The Sopwith Aviation Co.

OLYMPIA STAND NO. **22**

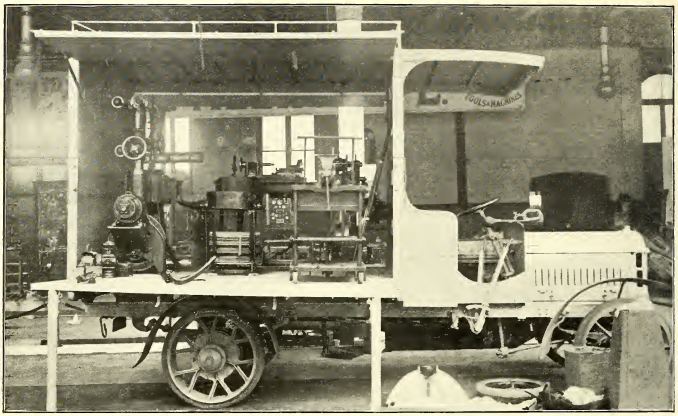
Winners of the premier British event of 1912
(British Empire Michelin Duration Competition, 8 hrs. 23 mins.)

Are showing their new **80** h.p. Tractor Biplane, which has shown such extraordinary results, having a speed variation of **38-70** miles per hour.

Also their new **90** h.p. Hydro - Biplane, which surpasses all previous models.

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The Dennis-Drummond Automobile Workshop, shown by the Aircraft Company.

Government and to those which have flown before the public at Hendon throughout the latter half of the past year. The front elevator attached to a continuation of the skids is still retained, and works in unison with the tail elevator. The finish of the entire machine, which is British-built, is, if anything, better than that of the earlier biplanes. The planes are treated with a "dope" that leaves them smooth to the touch. The cowl in front of the pilot is higher than has been usual, and has a mica window in the upper portion of the lip. Steel clips and sockets are used throughout the machine, aluminium having disappeared entirely. The wing construction is slightly different from past practice. The ribs, instead of being cut from the solid, are now built up from three-ply wood. The result is superior finish and greater strength, though in any case none can say that any Farman biplane was dangerously weak.

The Henry Farman biplane (80-h.p. Gnome engine) is of the type made familiar to the British public by Mr. Noel's flights at Hendon during the past summer. Here, again, no change of outward importance has been made. The landing chassis differs in unobservable detail, the ribs are of the new construction, the struts are hollow, and the tail is of the monoplane type. The tail skid has a metal plate attached bent at right-angles and fixed to a small laminated spring. This plate on descent acts as a brake and is, according to report, very effective. The general constructional details are similar to those employed on the Maurice Farman, and are of equal cleanness of finish.

The third exhibit on the stand has a special interest of its own as the first motor repair van designed and built for aviation work in Great Britain. The Army lacks such cars entirely, though one understands three orders have been placed



The latest Bristol Biplane, with 70-h.p. Renault.

NIEUPORT

AEROPLANES & HYDRO - AEROPLANES.

British Manufacturing Company now in course of formation.

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Henry Deutsch Cup ... ... HELEN
Circuit d'Anjou... ... ... ESPANET
World's records for speed, distance, duration with pilot and three passengers : 62 miles in 56 m., 32 s. (Vienna) MANDELLI
Sebastopol—Moscow—St. Petersburg Flight ... ... LT. ANDREADI / LT. DIBOWSKY
Bambey—Dakar—St. Louis (Senegal) LT. FEQUANT
Grand Manoeuvres at Poitou.

HYDRO :—

First Grand Prix from coast to coast : St. Malo—Jersey and back ... ... WEYMANN

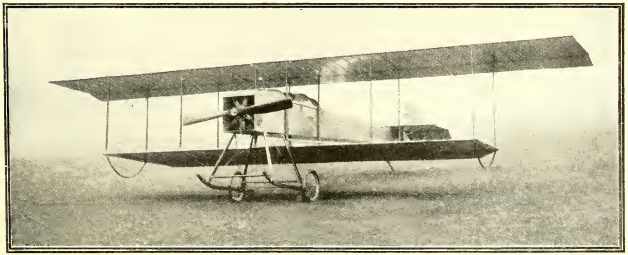
Distance record over the sea from Tamise on the Escaut, Anvers, Calais, le Havre, Vernon ... ... WEYMANN
Grand Manoeuvres of the Navy.

Learn to fly on the NIEUPORT. **Special Terms to Army and Naval Officers.**

Catalogues from Marc BONNIER, 2, Golder's Green Crescent, London, N.W., sole representative for Britain and Colonies.

STAND NO. 50, OLYMPIA.

CONTRACTORS TO THE ADMIRALTY.



Short 70-h.p. Tractor Biplane.

SHORT BROTHERS,

AEROPLANE WORKS AND FLYING GROUNDS—

EASTCHURCH, Isle of Sheppey.

Telephone :—9, MINSTER-ON-SEA. Telegraphic Address :—"FLIGHT, EASTCHURCH."

in France recently. The French had an efficient repair van in operation during the manœuvres of 1911, but we, naturally, have only just realised their necessity.

The chassis is a 28-h.p. Dennis two-ton lorry. On this a body of the horse-box type is placed, with sides that let down completely. Within are placed a Drummond lathe (largest size), a drill, a vice, a forge, and an anvil. With the exception of the lathe and the drill, all these tools can be removed from the van. Each tool is to be driven by an electric motor which derives its power from a larger motor driven by the lorry engine. This lorry will bear comparison with any in use in France at the present moment.

Such a wagon is essential to the Royal Flying Corps. Otherwise, unforgivable delays will take place in making repairs to aeroplanes which suffer slight damage away from their station. With such a wagon an aeroplane could be built from skid to tail strut if material were available.

THE BRITISH AND COLONIAL AEROPLANE CO., LTD. (Filton, Bristol).

There is certainly nothing more impressive in the whole show than the Bristol Co.'s exhibit. Though only two machines are shown, the display is so tastefully made, and the machines themselves are so striking in appearance that nobody can fail to be struck by it, and it is not surprising that his Majesty the King spent a considerable time on this stand during his visit. The machines shown are a monoplane with an 80-h.p. Gnome, and a biplane with a 70-h.p. Renault.

The monoplane differs little in design from the two machines which won prizes in the Military Aeroplane Competition last August, but details in the machine have been modified and various minor alterations suggested by some thousands of miles flying by various pilots during the past six months have been made, with the result that all the pilots who have flown the machine recently agree that it is one of the easiest to handle in any weather. M. Jullerot, who has probably flown longer than anyone except perhaps half a dozen pilots in this country, and who always impresses one with his caution, told the writer that he had never attempted anything in the way of fancy flying with confidence till he took to the new 80-h.p. Bristol monoplane, and the flying done by Messrs. Busteed, Pizey and Pixton on these machines in Roumania, Italy and Spain have had their results in extensive orders for those countries. The confidence of the makers in the machine is shown by their fitting wired-glass panels in the sides and bottom of the chassis.

The biplane is naturally more of a novelty. In the first place the housing of the Renault engine is quite the neatest thing of its kind yet produced, for everything is cased in except the cylinders themselves, and these are arranged so that they get the full benefit of the draught from the central portion of the tractor. The cockpits for the pilot and passenger have pneumatic padding on the edges to guard against the effect of a rough landing, and the whole of the metal housing forming the cockpits and extending over the tanks is held in position by turn-buckles. The control wheel and all its fittings are made of gunmetal castings and are, therefore, non-magnetic. The whole of the control gear is built as one unit and dropped into the machine complete.

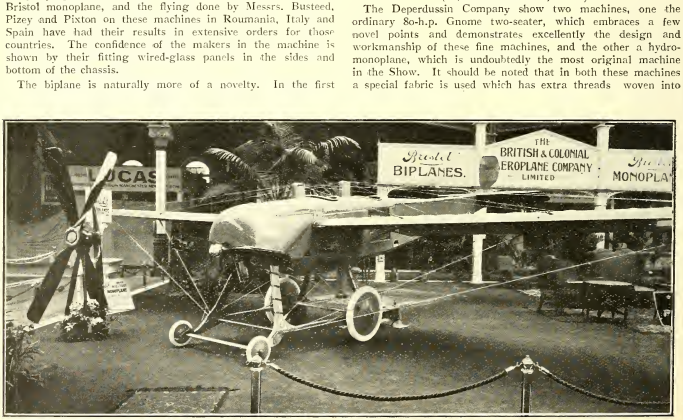
The planes are similar in construction to those in the monoplane, and are arranged with a most ingenious quick-release fitting. The top spars slip into the centre section of the upper plane, where they are locked by a spring and screw gear. To pack the machine for transport the wire bracing is released, the upper spars are detached, the struts are folded down without detaching, so that the upper planes lie on top of the lower planes. Then the rear lower spars are released and both planes folded back along the fuselage, working on a universal joint in the butt of the front spar.

Lateral control is by warping. The cables work along the front lower spar to the outer strut and thence to the top of the rear outer strut, the other running along the front top spar and to the lower end of the rear strut. The chassis is similar in general design to that of the monoplane, but having steel skids instead of the wooden skids previously fitted.

On both machines band brakes, operated by wires, are fitted to the rear pair of wheels so that when the machine lands it can be pulled up quickly, and as the brakes come into operation it throws forward on to the two leading wheels, which not only prevent it from turning onto its nose, but further impede its progress. The general consensus of opinion seems to be that the Bristol biplane is one of the outstanding features of the Show, and its initial test flights will be watched with the keenest interest not only by those in this country, but by many foreign Powers.

THE BRITISH DEPERDUSSIN AEROPLANE CO., LTD. (39, Victoria Street, S.W.).

The Deperdussin Company show two machines, one the ordinary 80-h.p. Gnome two-seater, which embraces a few novel points and demonstrates excellently the design and workmanship of these fine machines, and the other a hydro-monoplane, which is undoubtedly the most original machine in the Show. It should be noted that in both these machines a special fabric is used which has extra threads woven into



The Bristol 80-h.p. Monoplane.

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Mr. S. F. CODY, speaking at the Meeting of the Kite and Model Aeroplane Association, said :—

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it to prevent it from splitting should it be pierced at any point. These threads have the peculiar effect of making the wings appear to be clad in a very loud check, the sections being about four inches across.

The hydro-monoplane is peculiar in having under the wings a steel tubular boom starting from the bottom of the chassis close to the float and running out to the wing tip, where it is about 2 ft. below the under surface of the wing. From this boom streamlined steel tube struts run to the front and back spars, and the spars are braced by cables from the junction of these struts to the point where the next pair of struts join the boom. The effect is that there is an exceedingly good angle on the cables, and the main tension strains are thrown on the big steel boom; when the machine lands the weight of the wings is taken by the boom in compression, so that all overhead bracing is done away with. A somewhat similar system has been used on the Etrich monoplanes for some time, but has never been as neatly carried out. The boom itself has a light wooden streamliner behind it, and inside this run the warp cables which operate true ailerons at the extremities of the wings. These ailerons are, in fact, sections of the wing pivoting on a horizontal tube situated approximately at the centre of pressure much in the same way as the ailerons were operated on the early Blériots and more recently on the Goupy.

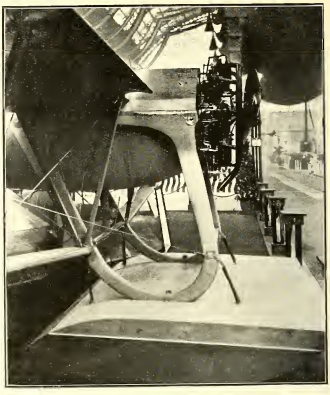
The chassis of the machine consists simply of two large hollow timber half hoops, the lower section being sunk into the large Fabre type float. The fuselage of the machine is of the "monocoque" type, originated by the Deperdussin firm. This consists of a single shell without internal bracing of any kind, the shell being built on formers from three layers of wood running in different directions and glued together and covered by a waterproof casing. The system has proved excellent on the machines in France, and strikes one as being at least as reliable as any other method of making fuselages, and it may quite possibly be more so. The engine on this machine is a 100-h.p. Anzani. The pilot and passenger are both excellently protected, each having a small non-inflammable celluloid screen in front of him.

A similar machine is now on order for the Admiralty, and the machine in the Show is to be tested as soon as weather permits by Lieut. Porte, R.N., somewhere on the East Coast. The behaviour of these two machines will be worth watching as involving new and interesting points in design.

The other monoplane has the latest half-hoop type of chassis, and the warping is now done from two independent levers fixed one to each side of the chassis instead of from a central rocker. The effect is to give the cables a much better angle.

BRÉGUET AEROPLANES, LTD. (Albemarle Street, W.)

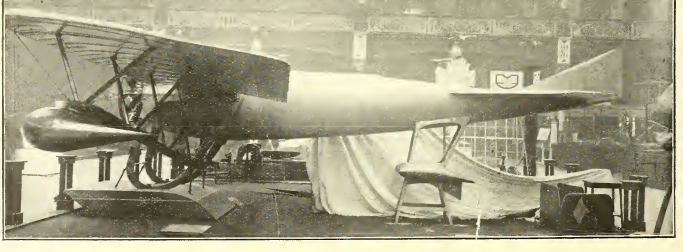
Bréguet Aeroplanes, Ltd., show a British-built Bréguet fitted with a 7-cylinder Salmson engine driving a propeller coupled direct. On the propeller boss is fitted a large metal dome suggestive of a dish cover, but actually carrying out the streamline of the engine housing. The radiator is fitted underneath the body of the machine, and circulation is obtained by a pump driven by a little air propeller in the slipstream of the tractor. The chassis is of a new type evolved by the British firm, in which the two small leading wheels are carried on an axle triangulated to the axle of the two main wheels and to the nose of the fuselage. The fuselage is of the usual Bréguet construction, consisting of a large steel tube running from the cross member under the pilot's seat to the tail. This tube is wire braced, and the aluminium casing from the pilot's seat to the tail is simply a streamliner, and does but little work. In other respects the machine is similar to those with which readers of The Aeroplane are familiar. On this stand is shown a very ingenious system of dual control by which the pilot can switch his own controls out of action and leave the machine in the hands of the passenger. The same gear can be arranged so that the passenger can, if necessary, switch the pilot out of gear.



The float and chassis of the Deperdussin.

L. BLÉRIOT (Belfast Chambers, Regent Street, W.).

The fact that the latest type of aeroplane designed by any of the old firms does not differ greatly from the first successful



The big Deperdussin hydro-monoplane.

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products of that manufacturer either points to the excellence of the original design or to the designer's paucity of new ideas. None can say that of M. Blériot. His latest aeroplanes are second to none for all-round excellence. The 50-h.p. single-seater has no superior as a touring machine, and very few two-seaters are of equal virtue with that now shown on the Blériot stand at Olympia. An 80-h.p. Gnome has taken the place of a 70-h.p. engine of the same make which was fitted as a standard last year.

In general design it is of the type which has made Blériot famous. The fuselage is square and uncovered as always, and the tail only differs in that the elevator is hinged to the trailing edge, instead of forming the end sections of the tail plane itself. The chassis is of the old familiar type which has proved its efficiency on numerous occasions, and under the severest of conditions. The collars to which the rubber shock-absorbers are attached again run up to the top "planche" as in the early model. The steel strengthening strip formerly placed under the lower planche is now sandwiched between two strips of wood and forms the main section of the planche.

The passenger sits behind the pilot with a large petrol tank dividing them. Cowls or bonnets—whichever one prefers to call them—are fitted in front of both seats. The forward one, which covers the engine and first supply tanks, is detachable by the release of two spring clips similar to those commonly used on the bonnet of a motor-car.

The whole monoplane is designed and built with a view to the quick dissembling necessary in military work. The shock-absorbers can be readily unhooked, when the wheels can be brought close to the fuselage, which reduces the height. The wing cables and stay wires are attached by means of a patent quick-release attachment which does not rely on a spring for its safety.

Very little steel strip is used in the model shown. In most places it has been superseded by stranded cable. Cable is not used for the warping wires nor for the wires on the upper surface.

The whole machine gives one the impression of being as finished a product as a motor-car, and anyone who has had occasion to use Blériot spare parts for repair work knows how accurately interchangeable like fittings are with like.

The popularity of the Blériot in the French army and the good work done by these machines in the Balkans proves the suitability of the type for military work.

The Borel Monoplane.

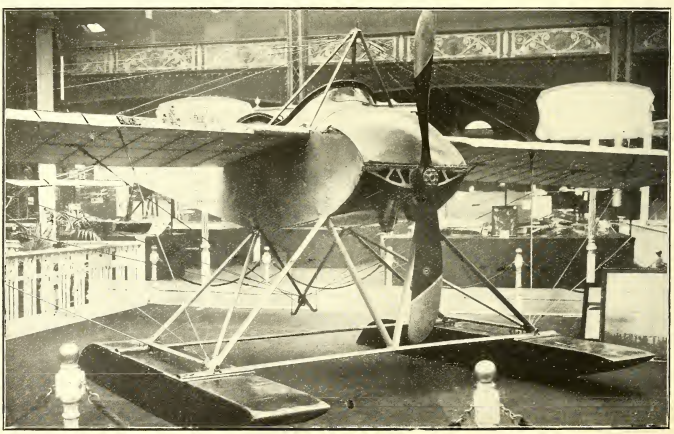
(Aerodrome de Chateaufort, Buc.)

Messrs. Borel show a two-seated hydro-monoplane of standard type. The Borel firm, since its entry into the field of design and instruction in the beginning of 1911, have proguessed until now they are in the first rank of manufacturers. The Borel monoplane has as a land machine many excellent feats in its record, and as a hydro-monoplane has flown among the first few at several meetings. The Italian Government, ever discriminating in its purchases, has ordered seventeen Borel hydro-monoplanes for use in the Italian Navy. Several of these have already been delivered. They were piloted through their tests over the Adriatic by M. Chemet, who is in charge of the stand at Olympia.

The monoplane shown is two-seated, with a covered-in fuselage. The engine fitted is an 80-h.p. Gnome with a strong steel front bearing and cowl, the latter streamlining the motor. The two floats under the main planes are of simple design without steps and are placed widely apart. A third small flat-bottomed float is fixed under the tail. The distribution of these floats gives a high degrees of stability even on rough water. The wing stay wires are attached to brackets at the point where the chassis struts join the floats. This method gives a directness of bracing almost unrivalled on any machine. In every case a wire and a cable run together from point to point.

Dual control is fitted, the pilot sitting in the front seat under normal conditions. The wings are cut away from the fuselage, fore and aft, that a better range of vision may be given. The system of control adopted is that popularly known as the Blériot type, though the "cloche" which gave it its familiar name has disappeared.

The fuselage and struts are painted pale blue. As a light, fast scouting aeroplane of high speed and considerable airworthiness, the Borel monoplane is in the first rank.



The Borel Hydro-monoplane.

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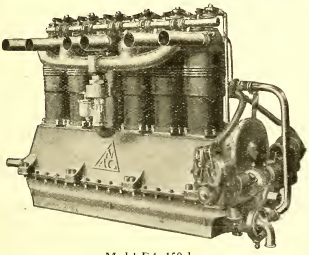
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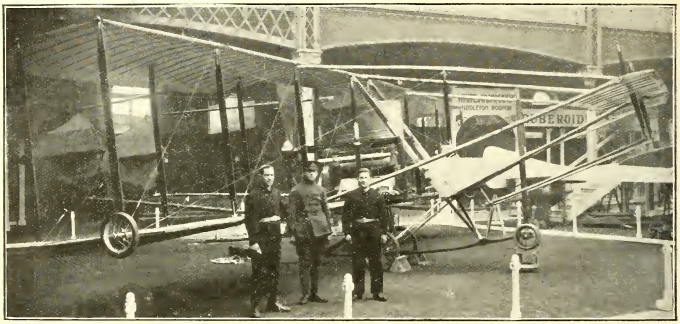
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The Cody biplane, with the Air Mechanics of the R.F.C. in charge.

S. F. CODY (North Camp, Aldershot).

Who can say anything new about the Cody biplane? The stages of its progress, and the deeds it has done, and the records that it has broken, and the flights it has made, are they not written in the chronicles of the Kings, not of Israel, but of the Air? Columns of praise of its design, construction and performances cannot say more than does the terse notice displayed on the machine setting forth that it has flown 7,000 miles, has won the Military Aeroplane Competition with £5,000 in prizes, and has won the Michelin cross-country prize.

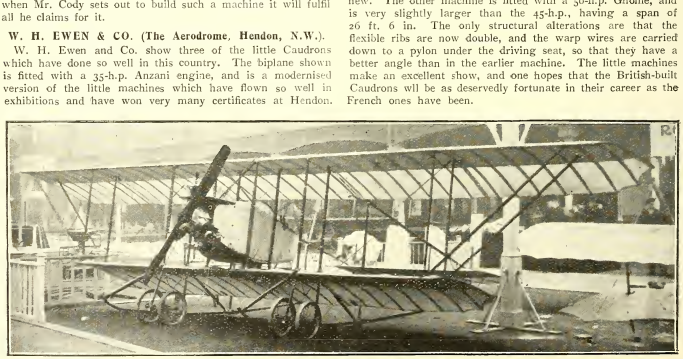
To all intents and purposes the machine is as it was when Mr. Cody performed at Doncaster in 1909. Its basic principles have not been altered. All one can do is wait in patience until Mr. Cody finds a financier with sufficient enterprise and money to enable him to build his promised automatically stable aeroplane. The writer, for one, is convinced that when Mr. Cody sets out to build such a machine it will fulfil all he claims for it.

W. H. EWEN & CO. (The Aerodrome, Hendon, N.W.).

W. H. Ewen and Co. show three of the little Caudrons which have done so well in this country. The biplane shown is fitted with a 35-h.p. Anzani engine, and is a modernised version of the little machines which have flown so well in exhibitions and have won very many certificates at Hendon. The chief difference is that the tanks are covered over by a cowl which extends forward and prevents oil from the cylinder wall ports of the engine from being thrown over the pilot. The only structural alteration is that the extended portions of the upper plane are now made detachable so that as small as the machine is it will now go into a shed only the width of the little lower plane.

Nothing fresh can be said about the machine, but the fact that it has not needed alteration is proof of its satisfactory design, otherwise one may be sure that the Brothers Caudron would, with their active brains and the amount of flying they do, have found out any weak spots and would have altered them.

Two monoplanes are shown, one of them the 45-h.p. Anzani on which M. Guillaux put up such a fine performance in the Aerial Derby. This machine has practically been rebuilt at Mr. Ewen's shed at Hendon, and is, if anything, better than new. The other machine is fitted with a 50-h.p. Gnome, and is very slightly larger than the 45-h.p., having a span of 26 ft. 6 in. The only structural alterations are that the flexible ribs are now double, and the warp wires are carried down to a pylon under the driving seat, so that they have a better angle than in the earlier machine. The little machines make an excellent show, and one hopes that the British-built Caudrons will be as deservedly fortunate in their career as the French ones have been.



The new 35-h.p. Caudron, with engine guard.



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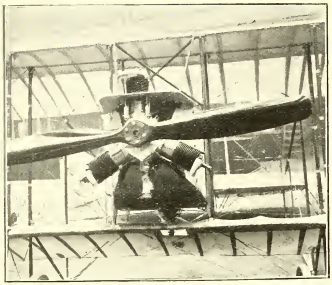
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The Caudron engine fitting.

THE GRAHAME-WHITE AVIATION CO., LTD.
(166, Piccadilly, W.)

The Grahame-White exhibit is naturally one of the most important in the Show, and the two machines on it attract a great deal of attention. The "warplane," with the engine in front and propeller behind, has already been illustrated in this paper, but a more detailed description may be acceptable. The engine at present fitted is a 90-h.p. Austrian Daimler. The machine was originally designed for a 120-h.p. engine with which it should fly at 70 miles per hour. The propeller drives back by a shaft to the rear of the pilot's seat whence a double chain of the Cody type drives a large hub on which the propeller is mounted. Through the centre of this hub, but quite independent of it, is fixed the upper of the three tail booms, and the control wires running over ball-bearing pulleys pass through this tail boom, emerging from the tube behind the propeller boss. The three tail booms, one above and one from the back of each skid, are connected by four triangles of streamline struts, and the tail and elevators are carried on a steel tubular bracing on top of the upper boom.

The chassis is notable for having very wide skids with twin wheels in the middle of them, and it is claimed that in spite of the comparatively short axle there is no fear of these wheels twisting over in a sideways landing.

A distinct novelty is the warp arrangement which operates on the upper plane only. The warping section is fitted with a push and pull gear with a streamline strut to take the upward push and a wire to drag the warp down. The idea is quite ingenious and should be successful. It is possible that in order to fly with a 90-h.p. engine it may be necessary to increase the surface of the machine, but the type is undoubtedly a good one.

The pilot and fighting man sit side by side just behind the engine, and the pilot behind them again, the whole engine casing and body for the passengers being of correct streamline shape.

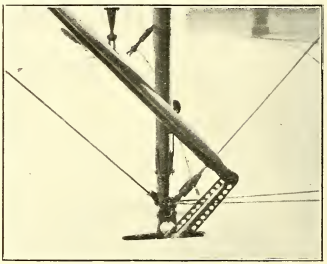
As a contrast to this elaborate machine is a very neat and simple hydro-biplane fitted with a 60-h.p. Anzani. This machine is of the usual tractor type, with a square cased-in fuselage. The machine has balanced ailerons; the struts between the planes are hollowed wood, but the chassis struts are of steel. The tail is non-lifting and triangular in shape, the elevator flaps prolonging the sides of the triangle with a balanced rudder between them. The passenger's seat is well out in front of the lower plane. One is struck by the fact that the planes are of very flat camber, and that there is plenty of surface.

The floats deserve special attention, being the only examples of their type in the Show. Outwardly they appear to be of the ordinary catamaran type, but actually there is a step halfway along, and aft of the step the bottom of the float is concave, air being admitted to the concave portion by pipes with ventilated cowls on top. The machine is supported on the floats by three steel tubular struts braced to the lower wing tips and to the centre of the machine.

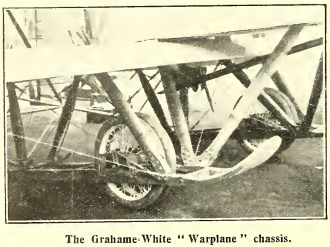
A remarkable feature about this machine is the fact that Mr. Gates only decided to have it built on January 6th, so that drawings have been made and the whole machine, except the engine, built in the Grahame-White Co.'s works between that date and the opening of the Show, a neat reply to the official view of the dilatoriness of British constructors.

PERCY GRACE (Wrotham Heath, Kent).

The Short biplane exhibited by Mr. Percy Grace is, as might be expected, a worthy representation of the work of the firm which has done more than any other in the country to impress on people the possibilities of the sea-going hydro-aeroplane. In its general arrangement this machine is similar to the famous "S.41," on which Commander Samson, R.N., has made so many fine flights round the coast, ranging from Harwich to Portsmouth, besides the flights in the Firth of Forth and at Weymouth; but in detail design and construction it is entirely different.



The Grahame-White "push and pull" warp gear.



The Grahame-White "Warplane" chassis.

Instead of the usual wooden struts for the chassis and the planes, streamline section steel tubing is used, and though the tubes appear very small, they are when tested quite as stiff as the much larger wooden struts used on many biplanes of similar power. The machine is fitted with an 80-h.p. Gnome engine which is most carefully cased in below against splashing, only the upper half being open for cooling purposes.

A novelty in connection with the engine is that it can be started from the passenger's seat by means of a shaft running along below the engine to a chain fixed on the propeller shaft. The fuselage is of the usual square section as in previous Short

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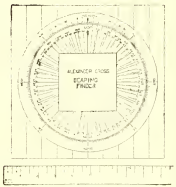


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tractor biplanes, but instead of the non-lifting tail fitted hitherto, this machine has a cambered lifting tail with the leading edge curving backwards to the big twin elevator flaps. The rudder, which operates between these flaps, is almost square and is lightly balanced.

Under the elevator is a tail float which is in side elevation shaped much like a very blunt-nosed plane, and aft of this is a small rudder for steering in the water. The lateral control is by means of long ailerons fitted to the outer cellule portion of the upper plane and to the extensions. The controls are operated by a wheel warp fixed on an elevator post, below which is the usual rudder bar.

The main floats are particularly interesting. There are two of them arranged catamaran fashion, and they are without steps; each float is divided into eight compartments by water-tight bulkheads, and each of these compartments, which are canvas-covered, has an inspection plate and a valve which is arranged so that, in the event of a small quantity of water penetrating, it can be blown out by an ordinary pump. The compartment which comes vertically below the leading edge of the plane has a wooden deck on which one can stand if necessary.

It will be particularly noticed that no solid wiring is used throughout the machine, stranded cables being fitted everywhere. The machine is supported on its main floats by three vertical steel tubes to each float, these being braced to the outside of the lower plane and to the centre of the machine. In consequence, when one is standing in front of the machine, it impresses one at once with the fact that head resistance has been reduced to a minimum.

Another point which strikes one about the machine on inspection is the care that has been taken for the comfort and protection of pilot and passenger, who have ample room and yet are well sheltered. The passenger, who sits in front, is well forward over the edge of the lower plane, and so must have quite as good a view downwards as in any machine in the Show.

Messrs. Short Bros. are to be heartily congratulated on having turned out what is undoubtedly the best piece of work yet done in their factory, though that is saying a good deal, and it is eminently satisfactory to see the very earliest of the pioneer aeroplane manufacturers in this country keeping so thoroughly up to date both in design and construction.

THE MARTYNSYDE MONOPLANE (Brooklands).

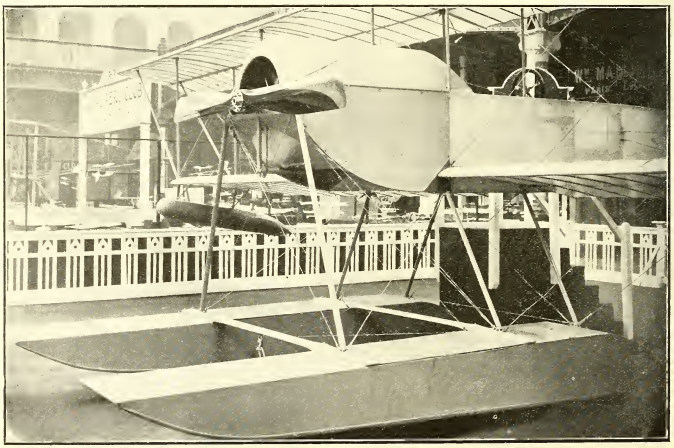
In a show certainly distinguished for the high level of constructional finish and detail work there is no better example of workmanship than the Martynside monoplane designed and built by Messrs. Martin and Handasyde at Weybridge. The machine is a large span monoplane with king-posted wings. It has a general external resemblance to the Antoinette monoplane. The motor fitted is an eight-cylinder water-cooled Laviator motor of 80 h.p. The landing chassis is generally similar to that of the earlier monoplanes of this type. The stay wires are of stranded cable of heavy gauge duplicated throughout. The fuselage is of three-ply wood, the section from the tail to the pilot's seat being covered with canvas. All the mechanical details are beautifully worked out, though in general design it differs little from previous machines of the type.

THE NIEUPORT MONOPLANE.

(M. Bonnier, 2, Golders Green Crescent, N.W.)

Since the first great success of the Nieuport monoplane at the Gordon-Bennett race of 1911, the productions of this firm have been watched with great interest by the aviation public. In each competition open to them of which they have taken advantage the monoplane has distinguished itself. Victory has not always gilded its day, but never has it ceased to attract close attention. "There is only one thing worse than being talked about, and that is, not being talked about."

The tragedy of the brothers whose enthusiasm and courage carried them so far down the road of scientific progress adds a sentimental interest to the products of their brains. The choice of the foreign governments gives the machine an increased value from the practical point. Whether over the enemy's lines in Tripoli, or flying in the sun at Belmont



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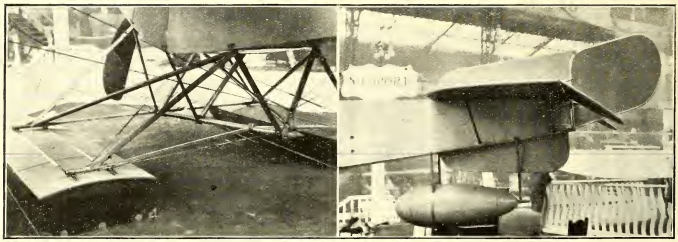
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Professor G. H. Bryan in the "Aeronautical Journal" says:—

"Up to the present time a noticeable feature of aeronautical work has been the want of a clear understanding as to the exact part which should be played by mathematical calculations in investing the properties of aeroplanes and airships. . . . In view of the chaotic conditions that have thus arisen a very useful purpose will be served by the publication of a book under the authorship of **so reliable a mathematical authority as Sir George Greenhill.** What was most wanted, and what we here have is an exposition of the principles and formulæ, dynamics, hydrodynamics, and applied mathematics in general, that are applicable to the calculation of the forces acting on aeroplanes and airships. . . . The subjects treated include general principles of flight, lift and drift, calculation of thrust and centre of pressure, the theory of discontinuous fluid motion gyroscopic action, the screw propeller, and the pneumatical principles of an airship. The subject on gyrostatic action is very important owing to the great effect which this has on the steering of aeroplanes.

The present volume should prove invaluable to every student of aeronautics.

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The Float Attachments and Tail Arrangements of the Nieuport.

Park, or passing swiftly over the interminable plains of Russia from Sevastopol to Petersburg, the Nieuport's record has never ceased to be one of distinction. Even its first appearance at the Reims meeting of 1910, when it was driven by a small two-cylinder engine of approximately 30 h.p., its high speed and controllability in the air gave presage of a brilliant future. One of Britain's greatest pilots told me but a few days ago that for ease of control in the air and security of feeling there was no machine, in his view, and he has flown many types, which can equal the Nieuport.

When hydro-aeroplaning became the fashion, not a little because of the assumed great safety of the sport, the Nieuport firm designed and built a hydro-monoplane which, piloted by M. Weymann, was flown to victory at St. Malo and at Tamise. Later he created a record for the longest flight over-seas in a hydro-aeroplane by flying from Belgium along the coast of France to the mouth of the Seine. This type, fitted with a 100-h.p. Gnome engine, is that exhibited at Olympia.

With the exception of the alighting chassis the general lines are those of the machines familiar to readers of this paper through pictorial representation, if not through watching Mr. Grahame-White fly one at Hendon in the early part of last summer. The alighting chassis, which is rigid instead of sprung as on the land machine, consists of two long floats placed widely apart. At the forward end of each float are baffle plates or small metal wings, designed to prevent the floats diving under water. Under the tail is a single small shuttle-shaped float.

Seating accommodation is supplied for three if the two passengers are not afraid of sitting in close contact. The dashboard fittings are placed with that neatness now identified with motor body-building. They include a compass, inclinometer, aneroid, revolution indicator, map-case, petrol gauge, and dual ignition control. A small cupboard is sunk into the fuselage behind the passengers' seat. A small brass-edged wind screen rests against the two forward front members of the cabane and attached to the lip of the cowl.

The controls are of the standard type—a single lever for horizontal and vertical steering and foot pedals for warping.

M. Bonnier, the British agent for the firm, is himself a famous pilot who originally flew a Train biplane, and has more recently "receptioned" the various Nieuports bought by the British Government.

MR. J. ROBERTSON PORTER.

There is a strong temptation to be funny at the expense of the Porter "Gyropachute," but personal knowledge of Mr. Porter as a serious student of aeronautics, and a growing conviction that no one really knows anything about aviation, prevents the writer from indulging in the easy witticisms invited by the somewhat quaint appearance of the machine, which strangely suggests one of those mechanically ventilated chimneyless paraffin lamps which had a considerable vogue some years ago. One fair visitor's remark that the machine had, at any rate, the advantage of keeping one dry, also seems apposite. Anything in the nature of serious criticism of its aim, objects, or principles may well be reserved until the machine not only lifts from the ground with the pilot on board, as it quite conceivably might do, but till it succeeds in returning safely thereto after having travelled some distance horizontally in a predetermined direction.

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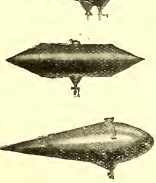
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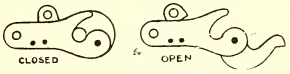
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in the history of the industry. An honest tale of difficulties overcome has a special appeal to the English people. Mr. Roe's secret of success, apart from the excellence of his design, has been perseverance, and now, at the eleventh hour, it appears as though rewards were to be his. The originator, so far as Great Britain is concerned, of the tractor biplane, lack of primary competition has not made his designs any the less excellent. Brooklands, Wembley, and the Lea Marshes, could places speak, have many tales to tell of courageous experiments made with little assistance and much discouragement. With no prejudices in his favour to help him, Mr. Roe has convinced the world of his high ability as a designer and constructor and of his right to a unique place in the history of British aviation. There is no tractor biplane built, either at home or abroad, of higher excellence than that built by this pioneer.

The two-seated (tandem) biplane displayed on the Avro stand is of the type supplied to the British Army and now in use at the Central Flying School, where the nature of the work is sufficient testimony to the capability of any machine which survives the necessarily rough treatment inseparable from a course of training.

There are few external differences from those recently built, but the general finish shows those signs of improvement which come from the proper understanding of experience. The chassis has undergone no fundamental alteration, the single skid and one transverse laminated spring remaining the same in disposition. A sprung metal spade is placed at the forward end of the skid, and serves to prevent the latter from digging into soft earth and so overturning the machine. Another addition is a small skid placed at the end of each wing. Under the outside strut at the lower end of each of these skids, which are attached elastically to the wing, is a small pair of wheels These wheels and skids serve to prevent the wings from touching ground when the machine rolls, and the elastic attachment reduces the jar to the wings and prevents the aeroplane being swung round on contact.

The engine fitted is a 50-h.p. Gnome, and in view of the findings of a recent committee, it is interesting to observe the strength and rigidity of the front bearer.

The planes are built in three sections, the two outer portions of which are readily detachable by the undoing of eight small nuts for each section. This operation only takes a few minutes longer than does the detaching of a quick-release clip, and many people consider it safer under all conditions.

Dual control is fitted, in both cases a single lever for warping and elevating, and a foot-bar for steering. The seating arrangements, aluminium foot-rests, and engine controls are commendably neat and businesslike. The view open to the observer is very extended and over the most useful field—that in front and below.

The warping cables are carried over large-size pulleys which not only reduce the wear, but lessen the strain of operating the controls. A tail-skid is fitted. The petrol and oil tanks are placed under the bonnet in front of the passenger, who, in his turn, is in front of the pilot. The filler caps of the tanks are large and in accessible positions Mr. A. V. Roe as designer, Mr. H. V. Roe as general manager, and Mr. Parrat as works manager, are to be congratulated on their exhibit.

The fact that the firm has nine machines on order for the Army shows how satisfactory those now in use have been, and the order augurs well for the future of the firm. It will be recollected that the board of the company has lately been strengthened by the addition of Mr. Groves, J.P. and ex-M.P., and Captain Lutwyche. The great business experience of the former and the knowledge of active service conditions gained in South Africa by the latter must naturally increase the firm's prospects of success very materially.

THE HANDLEY PAGE MONOPLANE.

(72, Victoria Street, S.W.)

Since practical aviation first took its place in the scheme of things, inherent stability has attracted public attention, and puzzled the designers. There is something peculiarly attractive in the idea of an aeroplane which, once in the air, needs only directional control. Who would not like to fly a machine in which he could ignore gusts and remous, and all the dangers of the upper atmosphere, with perfect safety?

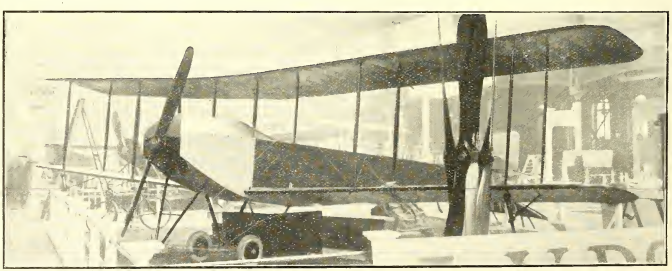
The Man in the Street even murmurs indistinctly that when such a machine comes into being, then he, too, will take to flying as a hobby. There have been many attempts to achieve this end, and in various ways: Herr Fokker in Germany, the Etrich in Austria, M. Moreau in France, and Mr. Weiss, Mr. Dunne, and Mr. Handley Page in England. None of these has been more successful than the last-named. The machine designed and built by him has a very high degree of what for want of a better term one has to call "inherent stability."

There is in truth no need whatsoever to touch the lateral control when flying. If it were not fitted the machine would be equally safe to fly, though it might not be posible to land with the same ease as the power of wing warping gives one in the manner of quick righting.

The wings on the Handley Page monoplane sweep backwards towards the tips after the manner of those of a gull. The planes have throughout a slight negative angle at the trailing edge "which is most pronounced at the plane tip." It is this form of wing whence the peculiar stability of this monoplane is derived.

The machine shown is one which, during the past year, has flown over a distance in excess of 2,000 miles without any serious mishap. It is a two-seater arranged tandem-wise, and is driven on a 50-h.p. Gnome engine. The pilot's seat is towards the leading edge of the wings, and in flight his range of vision is excellent. The controls fitted are a vertical wheel at the head of a column for warping and elevation, and a foot-bar for steering.

The tail, which consists of a large fixed empennage and an



The Avro Military Biplane—50-h.p. Gnome engine—being prepared for the opening of the Show.

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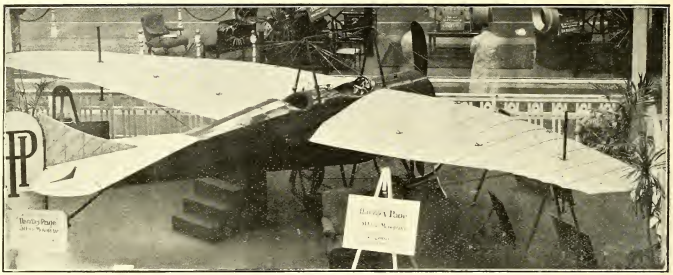
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The Handley Page Monoplane, seen from above.

elevator in halves, is of the main-lifting type. The fuselage is enclosed and of hexagonal section. The body is stream-lined carefully, the pilot and passenger being protected up to the shoulders.

The chassis is simple in design, and effective in practice. It consists of a single central skid between two wheels connected to it by floating axles. Shock-absorbers are fitted to the telescopic struts from these wheels to the fuselage. Experience has proved the excellence of the design.

The pilot has in front of him a dashboard on which are placed the usual instruments: a speed indicator, inclinometer, aneroid, revolution counter, and compass. A telephone system connects the pilot and passenger.

With full load on board the speed attained in flight is over 55 miles an hour.

This machine is that which was flown by the late Mr. Petre from Barking to Brooklands, passing through London on the way.

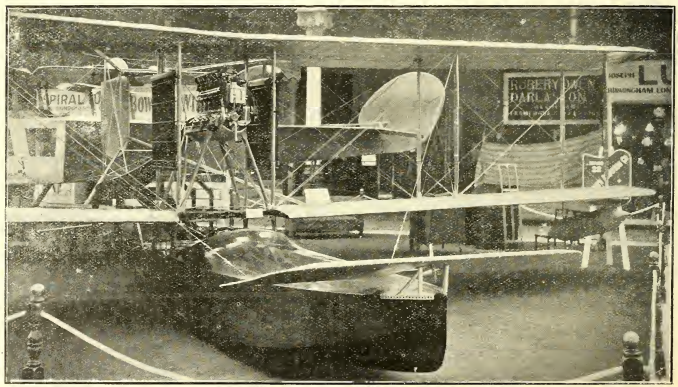
THE SOPWITH AVIATION CO. (Kingston-on-Thames).

The Sopwith "Bat-boat" is, of course, the outstanding novelty among the water-fliers at the Show, as it is the first flying boat constructed in this country. The boat, which is built by Sanders and Co., of Cowes, is sewn on the Sanders patent principle with copper wire, and is built on the lines of the racing hydroplanes for which Mr. Sanders is famous. The pilot and passenger sit side by side in the boat itself, and above and behind them is the aeroplane part proper, except for the fact that the extreme bow of the boat has a small elevator plane working in unison with the tail elevator.

The planes are beautifully built on the new principle evolved by the Sopwith Aviation Co., the spars being hollow and built in three portions, the centre strip of ash, and the outsides of spruce. The ribs are of white wood notable for its flexibility. The struts are also hollow, and are immensely stiff.

Near the upper plane is situated the 90-h.p. Austrian Daimler engine, which drives the propeller direct. The tail elevator and the rudder are carried on Farman type tail booms in the slip steam of the propeller. The whole machine is beautifully finished, and seems a most promising job.

It is interesting to note that in the event of the machine coming down on its nose in the water the buoyancy of the boat is so great as to compel it to come up before the planes



The Sopwith "Bat-Boat," with the Sopwith tractor biplane in the background.

get under water, and in the event of a really bad smash against anything solid the engine and all its fittings would probably carry clear over the heads of the crew. The buoyancy of the boat is something like four times the weight of the machine with crew and all on board, and as the boat is separated into compartments by water-tight bulkheads, there is very little chance of its sinking even under the worst circumstances.

The Sopwith tractor biplane also meets with very general approval, and its performances on test recently showed it to be an exceedingly efficient machine. In its general lines it is of the usual tractor biplane type with staggered planes, the planes being built on the same principle as those in the "Bat-boat." The chassis consists of the usual two skids and wheels, but it has a pair of small leading wheels on the points of the skids.

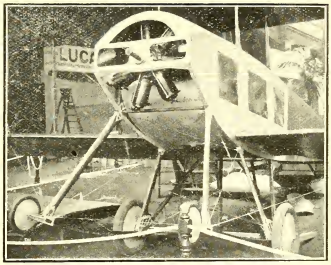
Head resistance in this machine has been reduced to a minimum. The struts of the central section of the planes are built inside the fuselage and there are only two pairs of struts at each side outside the fuselage. It should be particularly noted that although the individual cables fitted are strong enough to carry the whole weight of the machine, the lifting cables are fitted in duplicate to bolts held in double shear.

The control is by means of a warp wheel in the middle of a steel tubular arch, and there is comfortable seating for two in front of the pilot; both passengers have an excellent view over the lower plane. A notable feature about the planes is that the trailing edge is built on a light steel tube, so that there is no fear of the edge warping and throwing the planes out of adjustment.

When it rests on the ground the machine is designed to stand on the heels of the main skids, but in order to protect the rudder in the event of the machine running up on a bank and tipping backwards two light skids are fitted under the rudder.

J. SAMUEL WHITE & CO., LTD. (East Cowes, Isle of Wight).

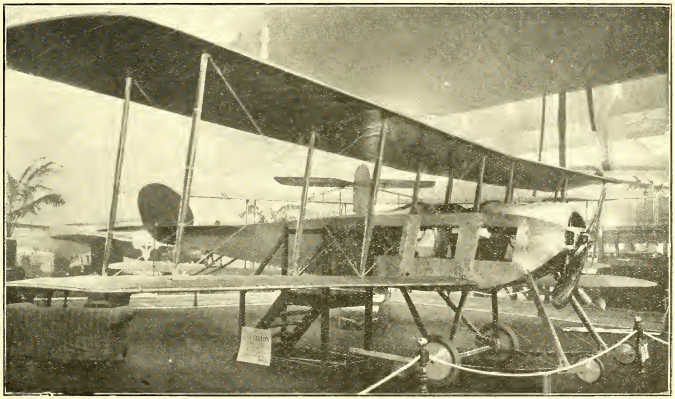
Certainly one of the most interesting machines in the Show is the big hydro-biplane exhibited by J. Samuel White and Co., Ltd., of East Cowes. This is, apparently, to be known officially as the "Wight Navyplane." It may be roughly described as a large span biplane, with two stepped floats placed catamaran fashion and a tail elevator carried on Farman-type booms. It will, of course, be remembered that the machine is the design of Mr. T. Howard Wright, one of the earliest and most successful constructors in this country; and as this is his first effort in waterplane construction, its performances will be watched with the greatest interest.



Front View of the Sopwith Biplane.

On close inspection, the machine reveals a number of peculiarities. The most outstanding is the plane section. This can best be described as consisting of two cambered planes with the entering edge of one joined to the trailing edge of the other; but, in effect, it has one camber to the lower surface and two cambers on the upper surface.

The tests of model planes of this type, which has been patented by Mr. Howard Wright, made by M. Eiffel in Paris show that it is not only in itself an efficient lifting plane, but that its maximum efficient position covers a very wide range of angle. According to these tests, the maximum efficiency actually operates through between 3 and 15 degrees inclina-



The Sopwith Tractor Biplane, built for the Admiralty.

tion, so that the machine should have an enormous range of speed and reserve of lift.

The pilot and passenger sit out in front of the lower plane in a long enclosed body; behind them is the petrol tank, and behind that again a 160-h.p. engine is to be placed, and it is calculated that at her best flying angle with full load she will have something like 60 h.p. in reserve. Lateral stabilising is by means of ailerons, and the only other controls are a rudder of high aspect ratio operating between elevators which are almost semicircular in shape. In front of the rudder is an upright fixed fin, and in front of the elevators is a good-sized flat tail. The control is by the usual universal lever.

The chassis arrangement is very simple, consisting simply of three struts to each float running vertically from the outside of the centre plane section, and three struts to the same points in the floats as the vertical struts, but rising to the centre of the machine underneath the engine bearers.

The workmanship throughout is thoroughly excellent and worthy of the high reputation of the firm as marine architects. All the struts are of ample dimensions, are hollowed out, and are covered with waterproof silk, which is then varnished to make it still more impervious to sea-water and weather. It will be particularly noted that all the metalwork, such as clips and sockets, are of high-grade steel treated by a special electrolytic process which makes them proof against sea-water. Altogether, the machine is a capital example of workmanship.

The floats on this machine deserve particular attention, as they represent the ideas of one of the foremost naval architects in the country. They have a pointed bow, and a stern tapering off almost like that of a racing skiff, and at the tail of each was a tiny water-rudder, since removed.

Each float has three steps, the forward step being about an inch in depth, the second about two inches, and the third about three inches, and it should be particularly noted that, contrary to the usual custom, there are no air-pipes leading to these steps. Naturally, the floats are beautifully made.

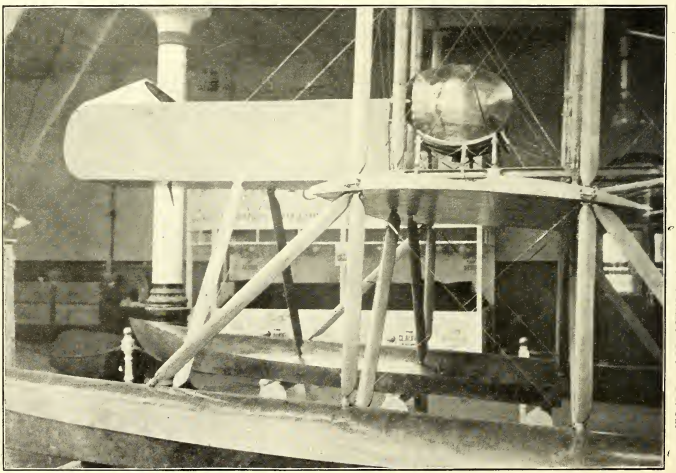
VICKERS, LTD. (Vickers House, Broadway, Westminster, S.W.)

The great firm of Vickers, Ltd., make a display worthy of their reputation as constructors of armament for the world at large. Interest centres in the new biplane designed specially for scouting and as a fighting machine. In this, contrary to usual custom, the passenger, armed with a new type quick-firer, is perched out in front of everything where he has an uninterrupted range of view and weapon. The machine is primarily a propeller-driven biplane with the engine, an 8-cylinder 60-80-h.p. Wolseley, behind, and the propeller, a Levasseur air-screw, inside the tail booms. The passenger and pilot are in a metal-cased body which tapers in a nice streamline to the engine.

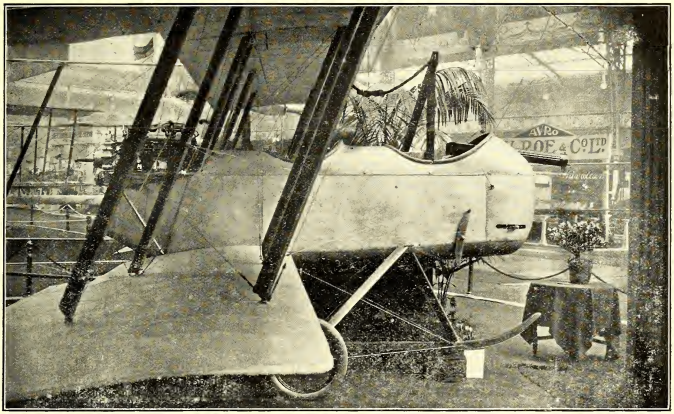
The top plane is staggered forward, the struts to the lower plane being of steel tubing with wooden streamliners clipped behind them. A notable feature about the planes is the long overhang outside the end pair of struts, a feature which gives a correct cantilever effect and is generally neglected by most makers of biplanes. All the bracing is by wire cables spliced and wrapped over rings, this arrangement being considered safer than any form of soldering. The upper plane is only slightly longer than the lower one. The tail booms are of steel tube, and form almost a triangle in plan, the tail itself being on top of the booms level with the upper plane, and between the elevator flaps is a rudder of high aspect ratio.

The chassis is of the familiar Vickers type with a single central skid on which are hinged the axle-tubes of the wheels, the weight being taken on spring-loaded struts sliding up the sides of the body. The skid comes well forward under the body and gives the impression that it would protect the crew adequately in many of the simple but serious accidents which happen when landing on rough ground.

Taking it all round, the machine gives one an excellent impression and the fine view possible for the observer should assure its being acceptable for military purposes.



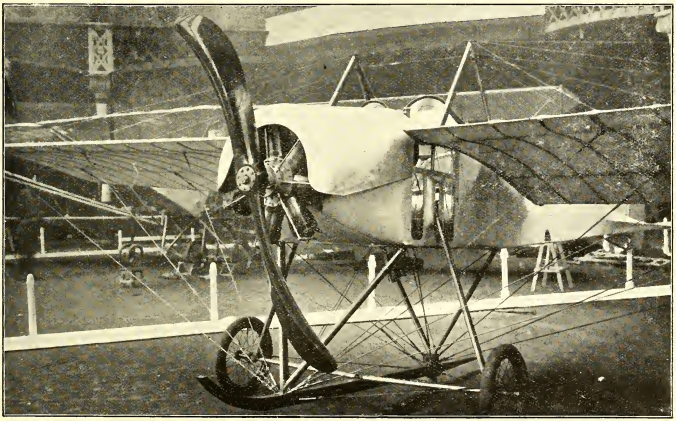
The "Wight Navyplane," with Mr. Howard Wright's double-camber plane.



The new Vickers "Destroyer," with 60-80-h.p. Wolseley engine.

The monoplane is similar in general lines to the old "Vickers VI" which flew so well under adverse conditions over Salisbury Plain during the Military Competition. This machine is, however, fitted with a 70-h.p. Gnome. The housing of the engine is carried back very neatly to form the separate deflectors for the pilot and passenger.

Since the photograph reproduced last week was taken, a small fin has been placed in front of the rudder. The fuselage, as in the old "No. VI," is shallow and wide, splaying out to form an "empennage" behind. This width should make for longitudinal stability, while the shallowness of the fuselage reduces side area aft and so should prevent nose diving. The



The Vickers "Side-by-Side" Monoplane.

chassis is the usual spring-strutted central-skid Vickers type, the tubes being streamlined with wood as in the biplane.

With the vast resources at their disposal one may confidently expect the new Vickers machines to figure largely in the big performances of 1913, for it must be recollected that up to the present the aviation department has been devoting itself almost entirely to experimental work. Certainly the two machines in the Show augur well for the future.

THE ENGINES AT THE SHOW.

THE AUSTRIAN DAIMLER MOTOR CO., LTD.

There are two engines on this stand, a four cylinder of 65 h.p. (120 by 140), and a six cylinder of 120 h.p. (130 by 175). Both are vertical engines with water-cooled cylinders. The 65 h.p. has four cylinders, cast singly, with electrically deposited copper water jackets. The valves are both in the cylinder head, and are both operated by one rocker arm and one push rod from a cam shaft in the crank case. A Bosch H.T. magneto with supplementary accumulator ignition and self-starter, is placed on an aluminium table at the side of the crank case. The lubrication is primarily induced (according to the stand attendant) by a Bosch patent lubricator with valveless piston pumps, adjustment of which can be made in a few seconds by the intelligent use of a screw driver. The carburettor is of special type, with a rotary sleeve throttle. A honeycomb radiator of light type is supplied by the makers. This engine gives its nominal horse-power at 1,350 revolutions.

The 120 h.p. is generally similar in design. The lubrication system is slightly different, and two independent Bosch magnetos (one with a self-starter) are fitted. This engine gives its nominal power at 1,200 revolutions a minute. Two carburettors, both synchronised and operated by the same lever, are fitted.

On both these engines a starting handle is fitted, thus making it possible for a pilot to start his engine without descending from the aeroplane.

THE BROMPTON MOTOR CO., LTD.

The Brompton Motor Company, Ltd. have on their stand one example of Benz work, the 100 h.p. four cylinder (130 by 180) aeroplane engine. This engine has been constructed as a result of over three years' experimentation in this type of engine, and on its first public appearance it won the highest award in the recent competition of aero engines in Germany. It ran for seven hours at 1,290 revolutions a minute, giving a continuous brake horse-power of 103.

This engine has four cylinders of cast-iron with separate water jackets welded on by special process. Both valves are in the cylinder head, and are operated by levers and rods from a single cam shaft built into the crank case. Each valve has two controlling springs so that the fracture of one does not put the valve out of action.

Much of the experience gained in the construction of light racing engines appears in the aero motors of this firm. Light pistons, I section light connecting rods, perfect balance, are all results of lessons learned. Carburation is simply obtained without the use of springs. The gas and air once mixed have an equal length of travel to each cylinder.

Lubrication follows the lines of the standard engines, and is pumped through the main bearings of the crank shaft. Special collecting rings are placed on the webs of the crank shaft by which the oil is taken up and distributed by splash.

Ignition is by two H.T. magnetos acting on separate sets of sparking plugs. These magnetos are carefully synchronised, and under normal conditions are both in constant use. In the event of one breaking down the other is sufficient in itself.

A large positively-driven pump is fitted for water circulation.

The general design of this engine is most pleasing, and has the appearance of high efficiency. There are no projecting parts, and it has obviously been designed and not merely assembled—an important difference that explains the failures of many pseudo aero engines. Neatness is even more a necessity on aeroplanes than on a car. General head resistance counts for so much that detailed attention to it is essential.

THE BRITISH N.A.G. MOTOR CO., LTD.

The British N. A. G. Motor Co., Ltd., show two engines, a 55 h.p. four cylinder, and a 150 h.p. six cylinder, both of the vertical type, and both designed for aeroplane work. These engines have attained a considerable reputation in Germany, and have lately scored heavily in a recent German engine competition.

The 55 h.p. has four cylinders (118 by 100), bolted to an aluminium crank case. The cylinders are cast separately and have walls of unvarying thickness. The water jacket is separate, and is of copper. Both valves are in the cylinder head and are operated by rocker arms and rods from a cam shaft on the top of the crank chamber.

The exhaust gases come out at right angles to the engine, and can be directed either way without excessive baffling. This is a point of some importance when one considers that an engine may be required to face either way according to whether the machine has a tractor or a propeller. Carburation, another point that is too frequently allowed to take care of itself, is well thought out on the N.A.G., the induction pipes being arranged to give an equal length of travel for the gases to each cylinder. The carburettor is of simple and effective design.

The water circulation is ensured by a centrifugal pump driven by gearing from the crank shaft. Ignition is by Bosch magneto, which on the 55 h.p. model is clamped to a table on the crank case wall and driven by encased gear wheels from the crank shaft. The engine gives its nominal horse-power at 1,600 revolutions per minute. A fly-wheel is not fitted as a standard, but is supplied if desired. The engine without fuel or water weighs a little over 3 lbs. a horse-power.

The 150 h.p. engine is arranged on the same general principle, but with six cylinders (135 by 160). Two high tension magnetos are fitted instead of one. The crank shaft has seven bearings as against five on the small models. There is no further difference. The work on these engines is excellent, and they are shown with the finish of the ordinary engines. A purchaser can see what his engine will be like without subtracting the brilliant cloak of patent enamel which serves on many engines to hide defects and please the æsthetic eye.

THE CLERGET.

In the course of the last two years, inspired by the success of a prominent rotary engine, several other firms have taken up the manufacture of engines of this type. The Clerget firm, whose fame, so far, has rested on the production of several aeronautical engines of the conventional type, have now produced a seven-cylinder rotary engine of 50-60 h.p. This engine is staged on the stand of T. B. André and Co., at Olympia. Several long flights have been made by aeroplanes fitted with this make of engine, and the French and Italian Governments have several on order.

The cylinders and crank case are all of steel, the former being cut from solid bars of nickel steel. Exhaust and inlet valves are both placed in the cylinder heads in removable valve seatings. They are operated by rocker arms and rods, the latter being timed in action from a simple timing gear of special type inside the crank case. The movement of single nut on each rod suffices for adjustment.

The pistons are of cast iron, and are fitted with three rings. A special packing band, consisting of two rings, one inside the other, is fitted at the top of each piston. The connecting rods, as might be expected, are hollow.

Lubrication, always a matter of high interest on any engine, is provided for by means of a pump, which supplies the oil to the crank case, after which it is distributed by centrifugal force through the hollow connecting rods, thence to the gudgeon pins, and into the cylinder walls and piston rings by means of a circular groove.

Ignition is by Bosch magneto through the customary distributor. I append a few figures: Bore 120, stroke 120, normal revolutions 1,200, weight 200 lbs., consumption per hour, petrol 4½ gallons, oil 1 gallon.

THE GENERAL AVIATION CONTRACTORS, LTD.

This firm show on their stand two series of engines—the Anzani and the Laviator. The first series are all air-cooled engines, disposed radially, and the second all water-cooled disposed vertically and *en V*. To deal with the Anzani first.

They show five engines of the following powers: 30 h.p. three cylinder (105 by 120), 40-45 h.p. six cylinder (90 by 120), 50-60 h.p. six cylinder (105 by 120), 80 h.p. ten cylinder (90 by 130), and 100-110 h.p. sixteen cylinder (100 by 110). As all these engines are generally similar, I will briefly describe the points of the 40-45 h.p., and let that suffice for all. The cylinders of cast iron, with cooling fins, are arranged radially round an aluminium crank case. Both valves are in the cylinder heads and are operated by a single rocker and push rod actuated by a cam plate in the crank case. The induction pipes are behind the engine that they may be in the warm draught from the cylinders. A Zenith carburettor is fitted as standard. Lubrication is by forced feed pump. A Bosch magneto is fitted. The auxiliary exhaust holes have disappeared, thus making the engine cleaner than in early days. The cylinders are held down to the crank case by two rods each. The other engines of this make differ, generally speaking, only in the number of cylinders, and the consequent necessary modifications.

Three Laviator engines are shown, two eight cylinder *en V* of 80 h.p. (100 by 130), and 120 h.p. (114 by 160) respectively, and one six cylinder vertical engine of 250 h.p. (180 by 200) for airship work only. The cylinders in all these engines are cast in steel with copper deposited water jackets. The valves are in the cylinder heads, and are operated by rocker arms and rods from the centrally placed cam shaft. Two Zenith carburettors, one for each set of four cylinders are fitted. A Bosch magneto is standard.

The six cylinder is similar in cylinder design though they are vertical and in line. There is no difference of importance.

THE GNOME ENGINE COMPANY.

Two examples of the Gnome engine are shown, the 100-h.p. fourteen-cylinder and 50-h.p. seven-cylinder. The first is simply a duplication of the second. It would be wearisome to enumerate even the greater successes attained since 1909 by the Gnome engine. Their name is legion, and all those engaged in aviation have some knowledge of its virtues and faults. It is not too much to say that to the Gnome motor is the greatest credit due for the present advanced stage of the aeronautical science.

The most notable difference in the motors shown is that a



The Gnome Engine Exhibit.

starting apparatus is fitted in both cases. A starting handle is supplied similar in operation to that of the ordinary motor car. By this means the engine can be rotated. At the same time there is driven off this shaft by means of a leather belt one of the new Bosch self-starters, a tiny magneto which, on rotation, gives a continuous spark.

As will be remembered, the Gnome is an engine of seven or fourteen cylinders, rotating round a fixed crank shaft. The exhaust valve is mechanically operated by means of a rocker arm and rod, actuated initially by a cam plate inside the crank



The G.A.C. Stand, showing Anzani and L'Aviator engines

case. The inlet valve is automatic, and is in the piston head. The explosion mixture comes from the carburettor through the hollow crank shaft into the crank chamber, from whence it reaches the cylinders through the hollow connecting rods.

Castor oil is employed as a lubricant, and is pumped mechanically into the crank chamber, whence it reaches its ultimate destination by centrifugal force.

THE GREEN MOTOR CO., Ltd.

Simultaneously with the first appearance of any practical aeroplanes in this country the Green aeroplane engine was placed on the market. As far back as 1909 this engine was a practical entity, and aroused great interest by reason of its singular points of design. It speaks well for the original excellence of the design when one says that the recent prominent successes of the engine have been made with a motor but little altered from the first of the type. From a military point of view it is essential that home industries, so far as they affect material of war, should be fostered to the highest degree. It is to be hoped that the Government will recognise the true worth of the Green engines.

Its general design is known to the aviation public through long experience. It will be remembered that the cylinders are all separately cast in steel in such a form as to ensure uniformity of thickness of cylinder walls throughout. The water jackets are pressed in a single piece from sheet copper. The head is drilled to correspond with the valves, ignition plug and pipe attachments. It is held in place by the domed nuts that fasten the valve cages to the cylinders. A faced joint is made between the cylinder casting and the inside of the cylinder jacket wherever there is a fastening of this description. At its lower end the cylinder jacket makes an expanding joint against a rubber ring carried in a grooved collar forming part of the cylinder casting.

Both valves are in the cylinder head, and are operated by rocker arms from an overhead cam shaft driven by bevel gearing from the crank shaft.

The crank case is of aluminium with a projecting plate on which is placed the magneto. A Zenith carburettor is fitted as a standard on all models.

There is now on all models an overhead rod operating depressors over the exhaust valves by which the latter can be opened, thus reducing the power of the engine satisfactority without switching off or altering the ignition. All these points apply equally to all new Green engines.

The Company shows on the stand a 35 h.p. four cylinder (105 by 120), two 60 h.p. four cylinders (140 by 146), and two 100 h.p. six cylinders (140 by 152). The latter type has several points of interest. Two carburettors are fitted, each serving a set of three cylinders, but synchronised in working and operated by one lever. A single six cylinder magneto is fitted at the end of the crank case on an aluminium extension and driven by bevel gearing from the crank case. On this model as on the smaller types, all water connection clips and rubber tubing have disappeared, being replaced by gun metal connections screwing in against a rubber ring.

Each model has a fly-wheel fitted as a standard.

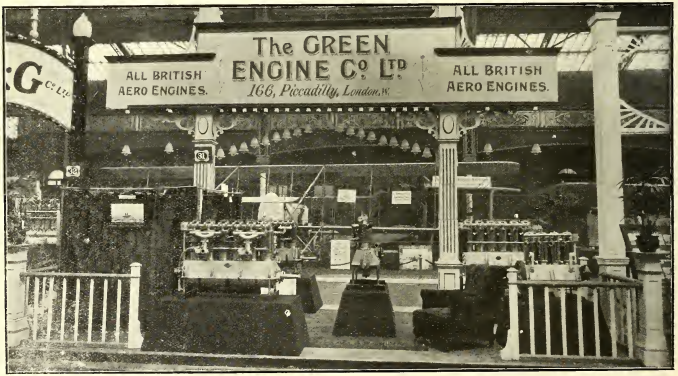
The engine, which ran unvaryingly for twenty-four hours in competition for the Alexander Prize, is exhibited without change on the stand, as is Mr. Cody's 100 h.p. which won the Michelin Cross-country Prize.

MILNES-DAIMLER-MERCEDES, LTD.

On this stand are three Mércèdes engines, a 70 h.p. four cylinder (120 by 140), a 90 h.p. four cylinder (140 by 150), and a 100 h.p. six cylinder (120 by 140). In each case the cylinders are cast in pairs complete with water jackets, and are mounted on an aluminium crank case. The valves are in the cylinder head, controlled in the 70 h.p. by rocker arms and rods from a cam shaft in the crank case, and in the 90 h.p. and the 100 h.p. by an overhead cam shaft driven by a bevel gearing and a shaft from the crank shaft. The ordinary Mercédès carburettor is fitted with a revolving throttle. On all these engines are two Bosch magnetos. Lubrication is forced, the oil being contained in the base chamber; should it be required to run for more than six hours a reserve tank can be fitted.

RENAULT, LTD.

Renault, Ltd., exhibit three motors, a 40 h.p., a 70 h.p., both of eight cylinders, and a 100 h.p. of twelve cylinders. These engines need no historical description, as from their inception four years ago, their work has been one continuous record of success. The world's record for duration in the air is held by a biplane fitted with a 70 h.p. Renault—this implies a record for the longest continuous useful run of an aero engine. Those aviators who have most experience in the use of this motor speak enthusiastically of it. Misuse will produce trouble, but that trouble should never be counted against the



The Green Engine Company's Fine Show.

engine's reputation. Provided proper oil is used these motors require as little attention as any now on the market.

The general design of all three engines is the same. Each has air cooled cylinders arranged *en V* over an aluminium crank case. Each has an aluminium casing through which air is drawn from the back by means of a vaned fly-wheel. So effective is it that one cannot remember a case of overheating except when someone of low intelligence has forgotten for a long period that oil is necessary for the good of engines. Then even the most amenable of engines is likely to give untold trouble. The cam shaft with the propeller mounted on it, is driven by a 2 to 1 reduction gear from the crank shaft, thus as the normal revolutions of the engine are 1,800 a minute, the propeller revolves at half that speed and in the opposite direction, thus ensuring higher efficiency. In the eight cylinder engines one magneto of normal type is fitted, whereas on the twelve cylinder two (six cylinder) magnetos are fitted dividing the work between them. The sparking plugs are of special design with a number of cooling fins fitted.

The cylinders are secured to the crank case by four rods bolted to a crosspiece over the cylinder heads. In less than twenty minutes a cylinder can be replaced.

The Renault type carburettor is fitted to all motors. This has round it a hot-air jacket, the heat of which can be readily regulated by the opening or shutting of a valve.

The oil circulation is ensured by the working of a pump in a sump formed in the lower half of the crank case.

WOLSELEY TOOL AND MOTOR-CAR CO., LTD.

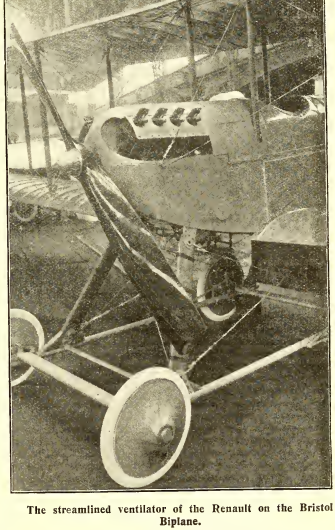
This firm shows three motors, two of 60-80 h.p., designed for aeroplane work, and one of 120 h.p. designed for use in airships. It has been a matter of surprise that so advanced a firm as this should have waited so long before bringing out a suitable engine for aeronautical use. A curious feature of the history of aviation in this country is the way in which great motor-car firms have held away from the new science in which one would expect them to find so large a field. The Wolseley Company, late as they are, are the first automobile firm to make any serious effort in this direction.

The first two motors mentioned are of 60 h.p. with eight water-cooled cylinders ($3\frac{3}{8}$ by $5\frac{1}{2}$), and of 60-80 h.p. with eight air and water-cooled cylinders ($3\frac{3}{8}$ by $5\frac{1}{2}$). To take the points of the 60 h.p. first. It has eight cylinders arranged *en V* in an aluminium crank case. These cylinders are cast in pairs without the water jackets, which are of planished sheet aluminium. These are riveted to the cylinders in a neat manner. The valves are all in pockets on the inner side of the cylinder heads, and are operated by a cam shaft built in between the two rows of cylinders. The gear wheels for driving cam shaft, lubrication and water pumps, and an eight-cylinder magneto (Bosch) are all encased and situated at one end of the crank case. A fly wheel is fitted to the propeller shaft end of the engine.

A Wolseley carburettor is situated in the centre between the cylinders with four branches conveying the gas to the inlet valves. The finish on this engine, as on all Wolseley engines, is excellent.

The 60-80 h.p. is exactly the same in general design, except as regards the cylinders. These are flanged for air cooling up to the top of the cylinder heads in which both valves operate. These are water-cooled, and are actuated by rocker arms and rods from the central cam shaft. The water pipes lead to a neat brass radiator, coiled round the nose of the engine, just behind the propeller. There are no other outstanding points of difference.

The 120 h.p. engine has eight cylinders (5 in. by 7 in.), also arranged *en V*, over an aluminium crank case. The cylinders are cast separately, and have spun aluminium water jackets screwed to them. The valves are both in the cylinder head, and have the usual valve gear. The carburettor is placed centrally with two leads to two pipes running along the two sets of cylinders. The magneto on this engine is also mounted between the cylinders.



The streamlined ventilator of the Renault on the Bristol Biplane.

More Chauvière Successes.

When M. Guillaux recently broke the world's record for speed, with a passenger, he used a Clément-Bayard monoplane fitted with a Gnome engine and one of M. Chauvière's Integral propellers.

The Volk Electric Railway and Aviation.

Mr. Magnus Volk, proprietor of the electric railway at Brighton which bears his name, is a pioneer by nature. To his early efforts is due, in no small degree, the success of electric traction in this country; and to-day he is playing a similar rôle in popularising the aviation movement. He has followed with characteristic enthusiasm the development of the new science from Wilbur Wright's earliest flights at Auvours until the present day. In 1911 he put up a prize for an aeroplane race from Shoreham to Black Rock, which resulted in an excellent contest between Mr. Oscar Morrison and the late Douglas Gilmour, on Bristol biplanes. Last year Mr. Volk was instrumental in getting the Grahame-White Aviation Co. to extend their waterplane tour to Brighton.

A Correction.

It is well to note that the reports published in various papers of two Bréguet aeroplanes having been badly smashed recently at Farnborough has been greatly exaggerated. The machines only just touched and did very little damage to one another. That which Sergeant Hunter had been flying was standing on the ground, and its engine was not even running, as the pilot was at the time making some adjustments to the engine. The other machine flown by Captain Beor alighted some distance away, and, being overtaken by a gust of wind as it was slowing down, ran forward a few yards farther than it would be expected to do. The only lesson to be learned from this gentle meeting is the advisability of fitting brakes.

THE ACCESSORIES AT OLYMPIA.

Aeros, Ltd.—The greatest novelty on the attractive stand presided over by Mr. Feary is the new tyre-filling material which goes by the name of Pneumelasticum. Unlike tyre fillings of the past, this new substance is neither gaseous nor liquid, but a solid. In appearance it is just one infinite sausage of extraordinary resilience. A length of this stuff equal to the wheel's circumference is cut off, the ends mitred to fit each other, and the whole inserted under the tyre cover, displacing the inner tube entirely, and with it the possibility of puncturing. The material is guaranteed, and if it does not exterminate the inner tube of commerce, it will, at any rate, tend to take the wind out of its sales.

The aerial aspect of this new tyre stuffing is interesting. Aeros are not only equipping the ordinary aeroplane wheels with the material, but are about to produce an amphibious wheel thus tyred. Spokes in this wheel are replaced by two cones of ⅛ mm. steel and a centre disc of the same material, thus each wheel is in reality a watertight tank, or, rather, a pair of watertight tanks, and as the Pneumelasticum itself is lighter than water, the flotation will be considerable.

Aviators have found themselves compelled from time to time, even in England, to fly directly into the glare of the sun. Aeros, in their optimistic belief that the thing is going to happen again, have marketed a range of goggles in chlorophyll glass, through which one may look, without trouble, at the brightest light. The beauty of this chlorophyll glass is that it does not render the vision obscure in dull light. These goggles, as well as another series in non-flam. celluloid, are made to button directly on to the Warren safety helmet (which Aeros also sell) without the need of straps and buckles.

The new air-speed indicator already described in this paper is attracting considerable attention. The principle is that of the aneroid barometer, drums of thin metal being acted upon by air-pressure led through pipes from the extreme wing-tips. These drums prove to be exceedingly sensitive to the pressure. The most interesting of the remaining exhibits on this stand is the electrically-controlled recording inclinometer, operated by two arc pendulums, which may be placed at any convenient position on the machine, the recording charts being mounted before the pilot's eyes.

Beside these articles, there are many good things to be seen upon the Aeros stand, including all conceivable articles of aviation costumery and millinery.



The Stand of Aeros, Ltd.

The Avanti Manufacturing Company show an example of the work performed by their Duplicator, a machine by means of which a propeller or tractor may be reproduced accurately, either from a template or from any given propeller. Apparently the same machine can also produce a similar propeller to the original but with curvature reversed. The process from first to last occupies only fifteen hours.

The Bowden Wire Company, Ltd.—The amount of control concentrated upon this stand is an object lesson to all impatient men; one only hopes that when humanity itself comes to be remodelled, the B. W. Co. will be consulted. There is little more than this to be said; one sees a tube and a wire; a lever at one end and a connecting piece at the other. That is all, and that is the perfection of it. The tubes are different, the wires vary, there are innumerable sorts of levers and innumerable sorts of attachments at the other end, the principle remains. Mr. Bowden has taught us more about control than any man since Mahomet.

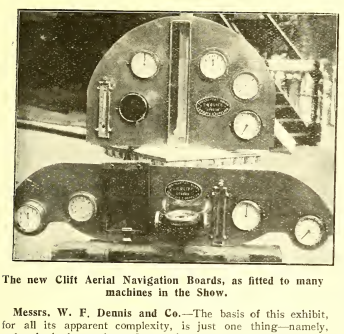
The British Petroleum Company, unable to introduce such an inflammatory topic as petrol into the exhibition, have contented themselves with showing, besides the well-known "Shell" tins of commerce, two very fine models, the first of a typical derrick such as one erects over an oil well, the other, of a typical tank steamer of their fleet, in which the oil is transported in bulk. It is interesting to note that these steamers are all named after shells, a case of which is also exhibited upon this stand. Many of these shells are extremely beautiful. A diagram is also exhibited, showing the various strata passed through in the course of a typical boring for oil. Altogether the stall well renavs a lengthy visit.

Messrs. Burroughs Wellcome and Co.—The comforting little metal boxes in their leather or canvas cases, with this firm's characteristic "T" upon them, have become, to all intents and purposes a standard fitment for aircraft. The cigarette-case size equipment is wonderful, but the completeness of the larger size outfits is truly marvellous. The largest set of all, which measures 21 in. by 16 in. by 7½ in., only requires a tabloid doctor to become a hospital. The particular set referred to is designed for the use of large mills and workshops.

The Cellon Company.—It is a far cry from combs and hair ornaments to "dope" for aeroplane fabric and varnish for wood. These are the extremes, so to speak, of the Cellon exhibit. The great point about the productions of this company is non-inflammability, the advantages of which, in connection with cigarettes, petrol, and the technical terminology frequently heard in hangars and places where they fly, need not be emphasised. It is a bold claim that every important open British competition in 1912 was won on machines doped with Cellon, but the claim has not yet been questioned, and the authentic list of Cellon users is certainly formidable. One learns that a large "dope" contract has just been executed for the War Office. But aeroplane dope is not the only solution found upon this stall, for the company also make Cellon wood varnishes, paper varnishes, and solution for electrical purposes.

The Cellon sheets are shown in many forms, thicknesses, and colours; the material appears to be ideal for aeroplane window purposes, as is proved by its use on so many machines in the Show. Mr. A. J. A. Wallace Barr, who has introduced Cellon to the aeroplane industry, is to be congratulated on his successful and shrewd business campaign, besides deserving thanks for providing so excellent and so safe a substance for the benefit of maker and pilot.

M. Chauvière (The Integral Propeller Co.) adopts very drastic means of proving the quality of the glue, varnish, and every other material used in the production of his "Integral" propellers. He subjects the complete affair to a test which it is not at all likely to undergo in real life; he submerges it in water and keeps it there for weeks at a time, without any ill effect. A novelty upon M. Chauvière's stand is the hydro-aeroplane propeller with blades half sheathed in brass. Another new propeller just introduced by M. Chauvière is seen for the first time upon this stand. It is designed expressly for the 35 h.p. Anzani, and the designer has great confidence in the future performance of this latest "hélice." M. Chauvière's confidence is usually justified.



The new Clift Aerial Navigation Boards, as fitted to many machines in the Show.

Messrs. W. F. Dennis and Co.—The basis of this exhibit, for all its apparent complexity, is just one thing—namely, galvanised piano wire. One gathers from an examination of the many and various examples shown that very nearly everything in the world can be done with galvanised piano wire. The specimens range from thin, almost hair-like wires, which are twisted together to form the smaller flexible cords, to huge two-inch-thick airship cables, built up from much stouter elements. The catalogue published by the manufacturers of this wire, who rejoice in a lengthy German name, is a most interesting and instructive booklet dealing with the several processes through which the steel has to go before it emerges as galvanised piano wire. The main point, however, is that the wire itself may be obtained from Messrs. Dennis.

The Dover Aviation Company, Ltd., is a newcomer, although Mr. Chalmers, the founder of it, has been doing agency work chiefly in connection with propellers, for some time. Their exhibit consists chiefly of the celebrated Normale propellers in various forms, the product, as is well-known, of Messrs. Ratmanoff et Cie. Particularly interesting exhibits are the propellers which were used by M. Beaumont during his "three great flights," and by M. Vedrines, when he broke the world's record by achieving a speed of 100 miles per hour. It is interesting to note that this propeller was designed for a speed of 160 kilometres per hour, and so near did performance approach mathematical calculation that the speed actually accomplished fell short of the theoretical speed only by one kilometre per hour.

A float of somewhat unusual design—also by Messrs. Ratmanoff et Cie—is shown upon this stand. It is built in two layers of wood, the grain of one running at right angles to the grains of the other, and a layer of oiled silk lies between the two. Internally the float is sub-divided into twelve watertight compartments, externally the angles are bound with brass. The design is such that when in the air the float gives considerable lift, and when a descent is made too steeply, the tendency of the float is not to "bury" in the waters.

It is understood that the Dover Aviation Company is soon to begin constructional work in England, not only of parts, but of complete aeroplanes.

Dover, Ltd.—There is little use in attempting to describe the feel of an Exonite steering wheel, but it is a very excellent feel indeed, and the latest wheel which they have marketed for the use of aviators is surprisingly light and pleasant, the metal used being aluminium. The four spokes of this wheel are made separately and are identical in shape, being stamped from the same die. They interlock at the centre, rather after the way of a Chinese puzzle, without the use of screws or bolts or any welding, and a centre plate is then bolted over them. These details, of course, are of mere academic interest to the "consumer" of complete wheels, but the manner of their fashioning is so ingenious that it deserves notice. There are many other interesting exhibits upon this stall, notably the new "dope," which, however, is not yet ready to be marketed. The new black Exonite lacquer bids fair to oust the old enamels which require to be stoved on to the metal they cover, whereas this new lacquer can be applied by any person, without stoving, for it is not brittle.

Dunhills, Ltd.—Perhaps the most interesting exhibit upon this well-stocked stand is the new Dunhill helmet, the most original feature of which is a pneumatic cushion extending across the skull and well down over the temples. Above this cushion is a spring steel frame, and over that a leather covering, in addition to this a thick wad of felt encircles the head at the temple line. Altogether, the new helmet looks a correctly designed and very efficient apparatus.

Several other helmets are shown, some of which are marketed and some are not. To the latter category belong the "official" helmets of the French and German Aerial Corps, of which pair the former seems to have a slight advantage, but neither of them appear to achieve a particularly high degree of efficiency when compared either to the new Dunhill helmet or to the three or four other well-known helmets sold in this country.

Messrs. Dunhills set themselves out to supply every possible form of clothing that the aviator or aviation engineers may require, from the cheapest of dungaree overalls to the most expensive of fleece-lined leather suits. One of these latter products is a very smart and comfortable-looking suit of breeches and tunic, the latter being designed upon the tunic now in use by the Royal Flying Corps, completely double breasted. In this suit the clumsiness usually associated with an aviator's leather costume is conspicuous by its absence. Messrs. Dunhills are also marketing a series of linen fabrics for monoplanes and biplanes, which appear to be excellent in quality and great in strength. Apart from these productions there is to be seen upon this stall a range of accessories and details so complete that one could imagine aviation to be as old an industry as that of motoring.

The Garuda Propeller Co.—One cannot help being struck by the beautiful dark and glossy finish of these propellers, which are of German origin. Though newcomers, as far as the British market is concerned, these propellers are well known and exceedingly popular in the country of their origin, where—so the manufacturers state—they have been used upon the machines which have won all the leading events of the day, including the Kaiser's prize.

The fascinating address of the Garuda Propeller-Bau G.m.b.H. is as follows: Naumburgstrasse 42/43I, Berlin2, Neukolln.

The General Aviation Contractors, Ltd., have such a multitude of novelties upon their accessory stand that it is difficult to know where to begin. Among the exhibits of Roold aviation clothing is a new hydro-aeroplane jacket, or rather waistcoat, which is by no means clumsy either to wear or to look at. The material is quilted, thin, and flexible, and so great is its buoyancy that the waistcoat will bring a man to the water's surface from a depth of fifty feet. One notes that the Roold safety helmet for 1913 has an addition in the way of special neck-protecting extension behind, the shock-absorbing material, as in the helmet's other parts, being cork and rubber. Perhaps the most noticeable aviation costumes exhibited are those made of cat skin, the appearance of which is rich to the point of magnificence. The suits of "Papier Kami" and "Papier de Japon" (which is very like rubber in texture and appearance) are also interesting, being light, impervious, and inexpensive. Another very fine suit shown is made in natural kid. The cheap black leather fleece-lined overalls, which are a G.A.C. speciality, retain their popularity.

Many goggles are shown, the most interesting of these being perhaps the mask fitted with "Simili" unbreakable glass and removable gauze patches over mouth and ears. Other "Simili" goggles are shown in glass both plain and tinted to protect the eyes against too brilliant light.

Tellier floats and "Rapid" propellers form an attractive part of the G.A.C. exhibition. These floats, which are among the most popular makes in France, are notable for their excellence of workmanship and design, M. Tellier having

gained a great deal of valuable experience during the time he has been building motor-boats and hydroplanes. The "Rapid" propellers also are extremely popular, both in France and England, as well as elsewhere. One of these propellers, brass-tipped, is mounted upon the Deperdussin hydro-monoplane.

Dope and fabric from the "Emaillite" factory are shown in great variety. It is satisfactory to note that the manufacture of this popular and efficient dope is soon to be begun on this side of the Channel ; for the present it is imported in exceedingly picturesque basketed carboys, a pyramid of which is shown upon the G.A.C. stand.

Among the instruments one sees the "Monodep" compass, with its peculiarly sensitive arrangement for informing the pilot of any tendency to stray from his exact course. Clocks, barometers, and watches—wrist and otherwise—are present in bewildering variety.

Phials of their "Aviol" are shown ; this new cylinder oil is peculiarly insensitive to temperature.

The Audiphone is shown, a neatly-devised double speaking tube, uncomplicated by any mechanism. It may be attached to the Roold helmet and detached at will. Conversation between pilot and passenger may be carried on through this tube without difficulty, even through the din of a 160 h.p Gnome.

The G.W.T. engine-starter is attracting a deal of attention. The arrangement is compact. A lever is pulled backward and forward, a shaft being rotated in the same direction, whichever way the lever is pulled. It is claimed that a couple of pulls upon this lever is sufficient to start up a 100 h.p. Anzani.

"Geographia," Ltd.—Perhaps the most interesting of the varied exhibits found upon this stall is the Alexander Gross "Anti-Drift" compass. This is a liquid compass specially designed for use in aeroplanes. The manufacturers claim absolute steadiness of the dial, oscillation being practically eliminated ; extreme sensitiveness, showing even the smallest change of course with great accuracy. The Anti-Drift arrangement checks the most minute deviation from the course set.

Another "Alexander Gross" production is the transparent bearing-finder. By placing this plate over his map the aviator may set his exact course.

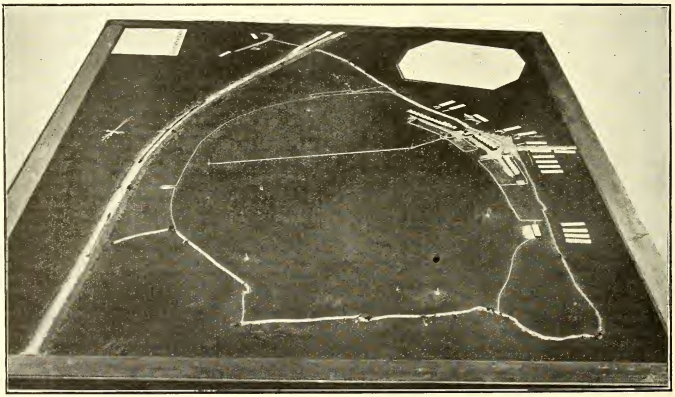
Besides these specialities a variety of instruments connected —as is suggested by the firm's name—with the geographical movements of an aeroplane, are found upon this stall, maps, map cases, barographs, and notably the "Saf' safety indicator, an instrument which acquaints the pilot at once with the most minute changes in the atmospheric conditions in which the aeroplane is moving.

Hewlett and Blondeau.—The specimens of oxy-acetylene welding exhibited by this firm go far to convince one of the excellence of this method, when efficiently and conscientiously carried out, the control lever shown being a splendid piece of work, and a section—cut at random—of a scrapped socket, showing the welded joint to be absolutely flawless and perfect. The Gnome engine plates, engine shield dome in aluminium, and the various tanks shown, as well as the large number of small parts which they manufacture, all show the absolute competence of this firm to turn out correct and trustworthy work.

The Hoyt Metal Company's exhibit is not spectacular, but there is matter in it of some moment to engine constructors. The Standard Babbitt or Anti-friction metal, "I.C.E." quality, is being used a lot in the construction of internal combustion engines. The die-cast bearings exhibited are guaranteed true to .00 in. That is accurate.

Joseph Lucas, Ltd., show a great range of electric lighting arrangements specially adapted to aircraft. The most interesting of these is the first example of a new dynamo which they are perfecting, designed especially for this sort of work. The control, which, in former models has been by clutch, is managed in this new model electrically.

William Mallinson and Sons, Ltd.—Any lover of timber will linger long at this stall. Ash, hickory, pine, cypress sycamore, walnut, and teak, poplar, cedar, mahogany, silver spruce. These are a few, clean and planed up, to show their beautiful grain. Such a collection is well worth seeing. The fame of the name of Mallinson as providers of timber for aeroplanes is world wide, the quality and the supply justifies their reputation.



The London Aerodrome from 3,000 feet.—The Scale Model at the Show shows the Sheds, Enclosures, Pylons, the Railway Bank, the Fence round the ground, and the Winning-Line across the centre.

R. Melhuish, Ltd., provide a magnificent display of metal- and wood-working machinery and tools. They might almost be called publishers as well, for they issue two volumes which ought certainly to adorn the shelves of every man who works in wood or metal. These are the firm's two new catalogues, the first containing 550 pages and 5,000 illustrations, being the metal-workers' catalogue, and the second, 338 pages long, providing for the wood-worker. One sees upon this extensive stall very nearly every form of metal, sheet, tube, bar, and angle with which the worker has to deal. One finds also a new model aero engine for practical work on a small scale. There are, besides, a collection of instruments, barometers, etc.

The Motor Radiator Company.—The honeycomb radiators exhibited by this company are notable for their perfect finish and general appearance. The petrol tanks are excellent specimens of the metal workers' art.

Navaltum, Ltd.—The great troubles about aluminium are its susceptibility to corrosion, the difficulty of casting it, and its very low tensile strength. On picking up one of the exhibits that are found upon this stall, one's first impression is that one is handling a piece of aluminium, so slight is the apparent difference in weight. Navaltum is a white alloy of aluminium, about one-third the weight of gunmetal, for which metal, as well as for brass and copper, it may be substituted in many instances. This new metal, as may be seen from the numerous specimens exhibited, may be drawn into wire, may be rolled, and may be cast without undergoing any special process; it may also be soldered and welded.

Apart from these advantages, the new metal is unaffected by prolonged immersion in concentrated sea-water, both hot and cold; and fourteen days' immersion in hot magnesium sulphate merely added a slight film of oxide over the surface.

Specimens are shown of the metal in widely different grades; it can be produced soft and ductile, almost zinc-like in appearance, or it can be produced stiff and springy like brass; it can take a high polish, and it can be plated. To come to comparative details, the specific gravity of Navaltum is from 2.2 to 2.8; that of aluminium 2.7. The tensile strength of Navaltum, according to grade, is from 9 tons up to 25 tons per square inch. In fact, weight for weight, the strength of Navaltum is even higher than that of mild steel. The castings exhibited are notable for their sharpness and for their thinness, resembling, in fact, good castings in iron.

Joseph Owen and Sons, Ltd., are giving a magnificent display of magnificent timber. Particularly interesting are the complete propellers shown, and the hickory skids in process of manufacture. This company undertakes the manufacture of these parts as well as the supply of flawless wood. A visit to the stand convinces one of the excellent quality of the goods sold.

Mr. Pettett, of Brighton, demonstrates, personally and vividly, the safeness and expeditiousness of filling one's petrol tanks by means of his safety filler. Petrol is almost as inflammable as it is expensive, so that a leakage—to speak in allegory—counts "two on a division." Mr. Pettett's device is correct.

Price's Patent Candle Company, Ltd., seem to be exhibiting almost every greasy thing in nature with the exception of patent candles. There is the "Anti-foul" oil and jelly, beloved of riflemen; the motor-cyclist's "Huile de luxe," and a hundred other grades of oil and grease for every lubricating purpose from Dreadnought shafts to hand-drills—including aerial engines. All in all, the stand of Price is about the oiliest thing in Kensington.

The Ruberoid Co., Ltd., emphasise the fact that their roofing is not a makeshift, but a permanent affair, like slates and tiles. Felt, they say, is felt; but Ruberoid is Ruberoid, and will "render" on a flat roof as well as it does on a roof that slopes. Being light, it does not require the heavy supports necessitated by other permanent roofings, and being inexpensive in itself, it still further decreases one of the greatest expenses with which the owner of an aeroplane has to contend—namely, the housing problem. Moreover, the green and red grades of roofing give an effect far more pleasing to contemplate than the majority of roofing materials. Both Peary and the late Captain Scott made extensive use of this material. The officers' headquarters at Eastchurch are covered with Ruberoid.

Messrs. Rubery Owen and Co. are showing a very useful instrument in Fox's patent wire-bending pliers, which treat steel wire very tenderly, as it should be treated, but still with the firmness necessary to insure its obedience. Another interesting and efficient device is the patent Anchor-slip, which may be pulled free with ease, even when under heavy stress. Many other aeroplane accessories in high tensile steel and chrome vanadium steel, are shown, and also several designs of engine housings and engine supports; special "aero" wire and examples of oxy-acetylene welding, all matters for which the firm has become deservedly famous.

S. Smith and Sons, Ltd., show a very complete range of clocks, compasses and other instruments adapted for the aviator's use. Biram's anemometer, for measuring the velocity of currents of air, looks to be a very efficient little instrument; and the luminous liquid compass which they show seems well adapted to its purpose.

The Spiral Tube and Components Co. show specimens of their radiators and also of the several sized radiator tubes which are used in their construction. These radiators are popular in aviating circles on account of the ease with which repairs may be executed upon them, and also on account of their efficiency relative to their air-resistance. The tanks which are also found upon this stand are of fine workmanship, and the same may be said of the various examples of welded framework which are there exhibited.

The Stern Sonneborn Oil Company, Ltd., display their well-known flag upon a host of packages, and the popularity of "Sternol" among users of internal combustion engines is borne out by the testimonials presented in a pretty little red pamphlet.

The Vacuum Oil Co., Ltd., are publishing at the Show a little pamphlet entitled "Almost Incredible," in which is stated the fact that the late Mr. Anthony New ran a 4-cylider Cadillac car for 1,588 miles upon 70 ounces of "Vacuum Mobiloil." This appears to be economy in its lowest terms, working out at 3,629 miles to the gallon. One does not expect to achieve that sort of thing in the air, but the fact of its accomplishment in any circumstances whatever makes one regard the display of pretty cruets and decanters upon this brilliant stall with a certain degree of awe. "We can lubricate everything except the Gnome," says their representative.

C. C. Wakefield and Co. give a very interesting show of packages and phials, and proclaim, in an attractive pamphlet, the many victories of Castrol on the road, on the water, and in the air. This product, as is well known, is a carefully calculated blend of vegetable and mineral oils, which lubricates Gnome engines as impartially as any other type.

White and Thompson, Ltd., of Bognor, is a new company, but not a company of newcomers, for the individuals concerned have been doing useful and expensive experimental work at their south coast habitation for four years or more. The main subject of their experimentation has been an all-steel biplane, which now stands at their works practically complete awaiting its 100 h.p. "A.B.C." engine. This machine is, for the most part, the creation of Mr. Norman Thompson, and, though one is not at liberty to disclose details, one may remark that the wings are of a most strikingly original design.

This stand—to misquote the Latin prose composition of early youth—does not exhibit many things, but much; to wit, a unique three-bladed propeller, also from the design of Mr. Norman Thompson, a propeller of which Mr. Lanchester speaks in eulogistic terms. The two most revolutionary features of this propeller, apart from its essential three-bladedness, is the fact that the blades may be detached, and therefore renewed singly, and the fact that their pitch may be altered at will to suit the nature of the engines and of the machine. The value of this quality requires no emphasis.

Two other exhibits of great interest are a helmet and a novel system of springing. The first of these appears at first sight to be somewhat clumsy, and the main difficulty will be to persuade the aviator to wear it, but the qualities of the article are great enough to insure its survival. The usual safety helmet distributes a skull-blow about the aviator's head, and this is a very desirable thing to do—up to a point. But there is little use in preventing a man's skull from being caved

in if the blow when thus distributed is merely going to break his neck instead. This new helmet, by means of downward side extensions, carries the blow to the aviator's shoulders and therefore ensures him against a far heavier shock than does the most efficient of skull helmets.

The springing system referred to was designed in its original form by Mr. Lanchester, but has been developed (in the substitution of metallic links for twine) by Mr. Norman Thompson. The principle may best be understood by imagining a series of chain links laid side by side with a couple of india-rubber bars passed through the holes. By multiplying this element we arrive at a sort of belt, the cross members of which are rubber bars, the longitudinal element of which are metallic links. The body of the aeroplane is slung by these elastic belts to a rigid chassis.

There may be seen on this stand a new safety belt, meant to pass not about the aviator's middle, but across his chest and over one shoulder; each end is secured to the machine by a quick-release device of original pattern, which releases as easily when the belt is in severe tension as when it is slack.

Vickers, Ltd., show their new metal "Duralumin" in many shapes and forms, stampings, forgings, plates, struts, wire, etc. The metal contains more than 90 per cent. of aluminium. Its melting point is 650 degrees centigrade, and it can be supplied in various grades and tensile strengths ranging from 25 to 35 tons per square inch. The metal is unaffected by mercury and by atmospheric conditons, and it is non-magnetic. The specific gravity is 2.8. Duralumin cannot be supplied for casting purposes.

Toys, Models, etc.—Beside the accurate and beautifully made model propellers shown upon the stands of M. Chauvière and other real propeller manufacturers, there are three stands devoted entirely to models and toys. **Mr. Spencer** shows his little balloons, of all shapes and sizes. **M. A. R. Lambert**, of Paris, shows some very captivating mascots, or "fetiches," as they are now called in his country, chiefly, little Gnome engines with propellers attached, and minute Gnomes with their crank cases turned into ink pots. He also shows a range of "Centrale" model propellers. **Mr. Twining** shows many model aeroplanes as well as parcels of parts and materials for making them; also model engines. **M. Prieur** shows several excellent novelties in the model aeroplane line, while **M. Albert Marquer**, of Paris, adds a universal spanner to his collection of dirigible kites and flying models.

The Royal Aero Club has assembled a number of interesting and amusing model aeroplanes, for which competitions are to be held.

The English Way.

"The N.P.L. are exhibiting wind tunnels and other apparatus at the Ghent Exhibition."—(Daily Press reports.)

England is a peculiar land, and the English are peculiar people. Some of our peculiarities foreigners envy; but some of them they do not begrudge us. Just at present aviation is much in favour, the aviation firms backed up by the Society of Motor Manufacturers and Traders are endeavouring to interest the British public in matters aviatic. Even the War Office is condescending to show the British taxpayer how *some* of his money is spent.

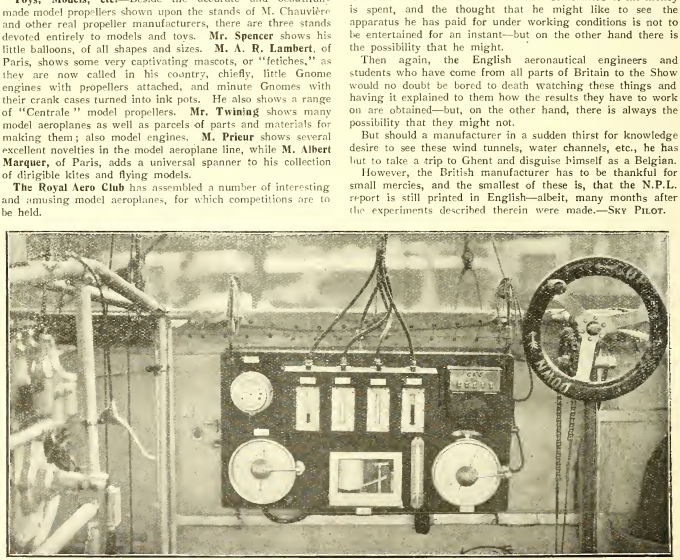
This is excellent and as things should be; but there is another incident which is escaping attention, namely, the generosity and unselfishness of the British taxpayers who, no doubt feeling contented and pleased at the way they are being interested at Olympia, are anxious to instruct others who have not the good fortune to be English. Accordingly those to whom the taxpayers have given authority—the National Physical Laboratory to wit—have decreed—without the knowledge of the majority of the public—that the people of Ghent shall see how the British taxpayers' money is spent in England, testing model aerofoils, struts, etc.

They also intend to show these very estimable people the results of the experiments so that their constructors will be able to compete successfully with ours. It is said that these apparatus are to be shown under working conditions, and that model planes, etc., undergoing tests will be exhibited. Of course, it is hardly likely that the English taxpayer visiting the Aero Show would like to see how some more of his money is spent, and the thought that he might like to see the apparatus he has paid for under working conditions is not to be entertained for an instant—but on the other hand there is the possibility that he might.

Then again, the English aeronautical engineers and students who have come from all parts of Britain to the Show would no doubt be bored to death watching these things and having it explained to them how the results they have to work on are obtained—but, on the other hand, there is always the possibility that they might not.

But should a manufacturer in a sudden thirst for knowledge desire to see these wind tunnels, water channels, etc., he has but to take a trip to Ghent and disguise himself as a Belgian.

However, the British manufacturer has to be thankful for small mercies, and the smallest of these is, that the N.P.L. report is still printed in English—albeit, many months after the experiments described therein were made.—Sky Pilot.



The control board of "H.M.A. Delta," showing the C. A. Vandervell electrical equipment.

The Week's Work.

MONDAY, February 10th.

R.F.C., Central Flying School.—Fine, clear, very slight S. wind. An ideal flying day. On Avro 404, Capt Fulton 5 mins.; Lieut. Holt twice 10 mins.; Lieut. Small 8 and 10 mins.; Capt. Fulton with Lieut. Marks on practice ground 15 mins.; Lieut. Marks 10 mins. straights and 8 mins. round aerodrome; Capt. Fulton with Lieut. Warter 25 mins. on practice ground; Air Mechanic Higginbottom with Lieut. Warter 10 mins., with an Air Mechanic 25 mins.; Lieut. Marks 5 and 10 mins.; Capt. Fulton with Lieut. Read 30 mins., with Lieut. Littleton 10 mins., with Capt. Mellor 15 mins., with Lieut. Warter 15 mins., with Lieut. Rathborne 25 mins. On Avro 406, Air Mechanic Higginbottom with Ldg. Seaman Marchant 45, 20 and 10 mins., with Sergt. Goodchild 20 and twice 15 mins.; Capt. Fulton with Lieut. Rathborne 30 mins., with Lieut. Read twice 10 mins. On Maurice Farman 403, Sergt. Stafford 20 mins.; Lieut. Ross 25 and 45 mins.; Lieut. Kennedy 22 mins.

On Maurice Farman 411, Lieut. Longmore with Sergt. Stafford 24 mins., with Air Mechanic McNamara 7 mins., with Sergt. Street 21 mins., with Lieut.-Col Cook 15 mins. On Maurice Farman 418, Lieut. Kennedy 14 mins. On Maurice Farman 425, Lieut. Boyle 5, 10, 11, 12 and 16 mins.; Lieut. Marix 25, 20 and 11 mins.; Lieut. Harvey 15, 17 and 20 mins.; Capt. Salmond 6 and 50 mins.; Capt. Millar 18 mins. alone, with Lieut. Marix 7 mins.; Lieut. Conran 12 and 13 mins. On Maurice Farman 428, Lieut. Burroughs 15 mins. On B.E. 417, Capt. Salmond 10 and 5 mins alone, with Lieut. Vernon 22 mins., with Lieut. Bigsworth 40 mins., with Lieut. Gibson 45 mins.; Lieut. Gibson 5 mins. rolling; Lieut. Arthur 15 mins.

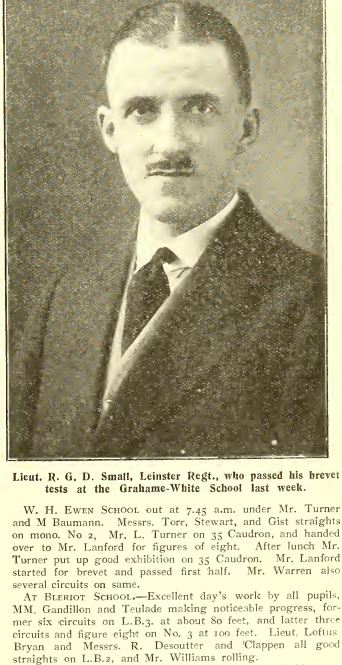
On Short 401, Major Gerrard with Sergt. Vagg 20 and 18 mins., with Lieut. Unwin 22 mins., with Sergt. Spencer 6 and 10 mins., with Air Mechanic Bannister 5 mins., with Sergt. Spencer 6 and 10 mins., with Air Mechanic Bannister 5 mins., with Sergt. Wright 16 mins., with Ldg. Seaman Ashton 32 mins., with Lieut. Oliver 10 and 9 mins.; Lieut. Oliver 20 and 5 mins.; Lieut. Roupell 12 mins. On Short 402, Lieut. Bowhill 21, 10, 15 mins.; Lieut. Unwin 11 and 10 mins.; Lieut. Watkins 8 and 7 mins.; Lieut. Roupell 22, 5 and 15 mins.; Capt. Lithgow 10 mins.; Capt. Tucker 10 and 20 mins.; Lieut. Glanville twice 10 mins.; Major Gerrard with Sergt. Vagg 25 mins.

Lieuts. Ross, Kennedy, and Capt. Salmond, R.F.A., took their brevets on Maurice Farman biplanes this day. Major Higgins with Lieut. Carmichael on B.E. 203 came over from Larkhill and returned later.

R.F.C., Farnborough.—Fine, clear day, no wind, very warm. On Maurice Farman 207, Capt. Dawes two fine flights 10 mins. at 700 ft., 45 mins. at 3,200 ft. Mr. Copland-Perry on Avro biplane flying for War Office tests. Lieut. Waldron with Capt Webb-Bowen as passenger returned from Hounslow on Maurice Farman 215. On B.E. 303 staggered, Capt. Reynolds, with A. M. Ankrett for straights. On Bréguet 213, Lieut. Wanklyn 16 mins, 18 mins. at 1,500 ft., Major Raleigh with Lieut. Smith 8 mins. at 1,200. Capt. Board, Lieut. Chinnery, and Lieut. MacLean all for short trips.

R.F.C., Lark Hill.—Lieut. Cholmondeley five flights on Maurice Farman No. 214, climbing to 1,000 ft. in 3 mins. and 2,000 ft. in 8 mins. First 20 mins. at 1,500 ft. in 10-m.p.h. wind to Shrewton and back with A.M. M. Webb. Second, 15 mins. at 2,000 ft. to Malborne and back with A.M. McRostie as passenger. Third flight 20 mins. at 2,000 ft. with A.M. A. Smith. Fourth, 15 mins. at 2,000 ft. with A.M. Ware, latter's maiden flight. Fifth, 14 mins. at 2,500 ft. Lieut. Carmichael 25 mins. at 2,000 ft. on Maurice Farman No. 214. Major Brooke-Popham 17 mins. on B.E. 205.

Hendon.—At Grahame-White School, in morning, Lieut. Small straights on No. 7 under Mr. Manton; Mr. Lan-Davis hopping half-hour on 2B. under Mr. Cheeseman, and later straights with Mr. Manton. Mr. T. Bayetto rolling on 4B mono, and later straights with Mr. Cheeseman. Lieut. Small straights, circuits and fine landings; Lieut. Hallowes straights on B.7; altogether a splendid day's work.



Lieut. R. G. D. Small, Leinster Regt., who passed his brevet tests at the Grahame-White School last week.

W. H. Ewen School out at 7.45 a.m. under Mr. Turner and M Baumann. Messrs. Torr, Stewart, and Gist straights on mono. No 2, Mr. L. Turner on 35 Caudron, and handed over to Mr. Lanford for figures of eight. After lunch Mr. Turner put up good exhibition on 35 Caudron. Mr. Lanford started for brevet and passed first half. Mr. Warren also several circuits on same.

At Bleriot School.—Excellent day's work by all pupils, MM. Gandillon and Teulade making noticeable progress, former six circuits on L.B.3. at about 80 feet, and latter three circuits and figure eight on No. 3 at 100 feet. Lieut. Loftus Bryan and Messrs. R. Desoutter and Chappen all good straights on L.B.2, and Mr. Williams rolling.

Blackburn School.—Out at 11 a.m. Mr. H. Blackburn 15 mins.; Mr. Morris rolling; Mr. Spink 15 mins. straights. In afternoon Mr. Blackburn, Mr. Spink, and Mr. Morris out.

At Deperdussin School.—Lieut. Hordern straights on No. 3; Mr. Phelps rolling.

Brooklands.—At Vickers School, Mr. Barnwell on No. 5 in morning to Staines Reservoirs at 3,500 feet. In the afternoon Mr. Barnwell cross-country on No. 5 for an hour out of sight of aerodrome for forty minutes. Mr. Knight testing No. 3, and handed over to Mr. Lane, who made good straights for first experience on mono. Mr. Knight then on No. 5 to Byfleet and Ripley.

At Ducrocq School.—Mr. Ducrocq testing. Mr. Percy Muller good circuits on Henry Farman.

At Bristol School.—Mr. Merriam for test, then with Lieut. Lee. Mr. Lane and Lieut. Crawford-Kehrmann obtained their brevets in good style. Lieut. Blatherwick did first circuits. Mr. Merriam took Lieut. Robertson Dobie (new pupil) for first flight. Lieut. Lee alone for first time.

Brighton-Shoreham.—At Avro School, in morning Mr. Batty-Smith straights, but landing down-wind capsized in ditch breaking propeller and fuselage Mr Powell flew to rescue with two mechanics on E.N.V. Mr. Wynne-Roberts rolling. Mr. Simms circuits, then 35 mins, cross country on E.N.V. round Worthing at 2,000 feet. Later with passenger.

Salisbury Plain (Bristol School).—Mr. England testing biplane with Lieut. Vernon afterwards taking Major Merrick, then alone in 50-h.p., then with Mr. Tower. Mr. Jullerot with Major Merrick in biplane, and in side-by-side mono. Later alone in 50-h.p. mono at 1,000 feet. Mr. Jullerot also on tractor biplane with passenger. Mr. Pixton on 80-h.p. mono. with Mr. England; afterwards alone in tractor biplane; also with Major Merrick. Mr. Tod taxi-ing in mono., finishing with a fine straight flight. Lieut. Vaughan took brevet. Mr Smith-Barry, an old pupil, out.

TUESDAY, February 11th.

R.F.C. Central Flying School.—Very misty early, clearing about 9.30 a.m. Then little or no wind; sunny. On Avro 404, Air Mechanic Higginbottom with Ldg. Seaman Marchant 30 mins.; Capt Fulton with Lieut. Littleton 20 mins., with Capt. Mellor 20 mins., with Lieut. Warter 20 mins.; Lieut. Warter 15 mins. on straights On Avro 406, Lieut Holt (twice) 15 mins., Lieut. Marks 15 mins., Lieut. Small 20 mins., Air Mechanic Higginbottom with Ldg. Seaman Marchant, 60 mins.; Capt. Fulton with Lieut. Rathborne 20 mins., with an Air Mechanic 20 mins. on practice ground.

On Maurice Farman 403, Air Mechanic Collis 10 mins., Lieut. Kennedy 15, 17 and 30 mins., Lieut. Ross 9, 15 (twice), and 58 mins., Sergt. Stafford 13 and 25 mins., Capt. Lithgow 12 mins. On Maurice Farman 411, Lieut. Longmore with Sergt. Stafford 5 mins., with Capt. Lithgow (twice) 20 mins., with Air Mechanic Collis 10 and 15 mins., with Sergt. Street 25 mins., with Sergt. Kemper 20 mins., with Capt. Fisher 12 mins. On Maurice Farman 418, Lieut. Conran 17 mins., Lieut. Boyle 4 and 14 mins.; Major Gerrard 6 mins. alone, with Capt. Tucker 8 mins., with Lieut. Glanville 8 mins., with Lieut. Unwin 11 mins., with Lieut. Jenkins 12 mins.; Capt. Tucker 8 and 7 mins., Lieut. Glanville 7 and 9 mins., Lieut. Unwin 8 mins. On Maurice Farman 425, Lieut. Harvey 20, 24 and 26 mins. alone, with Capt. Fisher 12 mins., Capt. Millar 15 and 8 mins., Capt. Salmond 13 mins., Lieut. Morix 18 and 23 mins., Lieut. Boyle 18 mins. On Maurice Farman 428, Capt. Salmond 12 mins., Lieut. Burroughs 18 and 20 mins., Engineer Lieut. Randall 33 minutes.

On B.E. 419, Capt. Salmond with Lieut. Macdonnell 22 and 30 mins., with Lieut. Dawes 45 and 16 mins.; Lieut. Soames 15 and 25 mins., Lieut. Burroughs 20 mins., Lieut. Bigsworth 8 and 10 mins., Lieut. Arthur 14 mins.; Capt. Salmond with Lieut. Vernon 40 mins.

On Short 402, Major Gerrard with Lieut. Oliver 5 mins., then Lieut. Oliver 60 mins. for brevet; Major Gerrard with Sergt. Wright 20 mins., with Sergt. Spencer 14 mins., with Sergt. Vagg 15 mins.; Lieut. Roupell 13 and 17 mins., Lieut. Bowhill 18 mins., Lieut. Watkins 5 mins.

R.F.C., Farnborough.—Mist early morning, but sun through about nine, after which fine, clear, warm day. Mr. de Havilland on B.E.2. Mr. Perry further tests of Avro. Mr. de Havilland also tested a new B.E. "staggered." On Bréguet 213 Major Raleigh 8 mins., then Lieut. Wanklyn 12 mins., followed by Capt. Beor. In afternoon Mr. Gordon Bell did good wor kon 100-h.p. Deperdussin mono., flat gliding angle of this machine being very noticeable. On 213 Bréguet, Mechanic Ankrett rolling 15 mins. Considerable crowd of spectators in afternoon.

R.F.C. Lark Hill.—Major Brooke-Popham 20 mins. round Plain before going to Farnborough on B.E. 205. Major Higgins to Central Flying School and back on B.E. 203.

Hendon.—At Grahame-White School.—Mr. Power straights under Mr. Manton on No. 7 and later with Mr. Cheeseman. Lieut Hallowes straights on No. 5 with Mr. Manton; Lieut. Small straights and circuits on No. 5, afterwards passing brevet tests in fine style.

W. H. Ewen School out at 8.40 a.m. Mr. L. Turner on 35 Caudron handed over to Messrs McGregor and Zubiaga. M. Baumann, with mono. No. 2. Messrs. Torr, Stewart and Prosser all straights. After lunch all pupils again out. During afternoon Commander O. Schwann, R.N., put up excellent flight on 35 Caudron, being in air 22 minutes. Mr. L. Turner two fine exhibitions on 60 Caudron.

At Eleriot School.—M. Teulade excellent eights on No. 4, and then took ticket in very good style at 450 feet; landings also noticeably good. M. Gandillon on same machine at 80 feet for circuits. Lieut. Lofius Bryan straights on No. 2, as also Messrs. R. Desoutter and Cleppen. Mr. Williams on taxi.

At Blackburn School.—Mr. Blackburn, Mr. Spink and Mr. Morris out.



Mr. Valazzi, the well-known juggler, and the first music-hall artist to take a monoplane certificate, which he did on a Deperdussin last week.—(Photograph by the Topical Postcard Company.)

At Deperdussin School.—Mr. Spratt on No. 4 'bus, Lieut. Hordern and Mr. Durand straights on No. 3. In afternoon Mr. Spratt again on No. 4, and then handed over to Mr. Valazzi for figures of eight.

Brooklands.—At Vickers School.—Mr. Lane straights on No. 3, Messrs. Barnwell and Knight exercised No. 5.

At Bristol School.—Mr. Merriam alone and with Lieut. MacLean. Mr. Bendall with Lieut. Robertson Dobie. Lieut. Blatherwick and Mr. Hall, alone. Lieuts. MacLean and Lee took brevets.

At Ducrocq School.—Mr. Percy Muller practising turns. Mr. Ducrocq up also.

Brighton-Shoreham.—At Avro School, Mr. Simms to Brighton and round Palace Pier; Mr. Powell dodged lamp-posts on Worthing pier for 15 mins. Mr. Simms 45 mins. to Brighton again, and then to Worthing, and so home. Later Mr. Simms took passenger round Lancing. Mr. Powell flew to his home at Storrington, via Worthing, reaching 5,000 feet. Mr. Simms over the Downs, then Mr. Powell flying till dusk, lost in fog, and knocked hole in hay rick with skid, but landed safely. All on 60 E.N.V. Avro.

Salisbury Plain (Bristol School).—Fog worst ever experienced and flying impossible.

Windermere.—Lakes Flying Co.—" Water Hen " out for couple of spins, after winter's rest. Bit stiff and shaky first time; better second time. Fog more or less all week.

WEDNESDAY, February 12th.

R.F.C., Central Flying School.—Sharp frost, slightly misty, fresh northerly wind. On Avro 404, Lieut. Holt 15 mins.; Lieut. Marks 10 mins.; Capt. Fulton with Capt. Mellor 30 mins. on practice ground. On Avro 406, Capt. Fulton with an Air Mechanic on practice ground 20 mins., with Lieut. Read 60 mins. also on practice ground, with Lieut. Littleton 30 mins. on straights; Lieut. Littleton 10 mins. on straights alone and 8 mins. circuit of aerodrome; Lieut. Small 10 mins.; Capt. Fulton with Lieut. Warter 30 mins. on straights; Lieut. Warter 10 mins. straights and 8 mins. circuit. Air Mechanic Higginbottom with Ldg. Seaman Marchant 20 mins. on straights; Ldg. Seaman Marchant 10 mins. straights alone.

On Maurice Farman 411, Lieut. Longmore with Sergt. Kemper 30 mins., with Sergt. Street 24 and 30 mins., with Capt. Lithgow 10 mins., with Capt. Paine, R.N. (Commandant C.F.S.) 14 mins. On Maurice Farman 403, Air Mechanic Collis 15 mins.; Sergt. Stafford 25 mins.; Lieut. Kennedy 18, 15 and 23 mins.; Lieut. Ross 25 and 20 mins.; Capt. Salmond 17 mins.; Lieut. Boyle 8 mins.; Lieut. Harvey 5 mins. On Maurice Farman 418, Capt. Tucker 7 and 8 mins.; Lieut. Unwin 13 and 8 mins.; Major Gerrard 10 mins. alone, with Lieut. Watkins 11 mins., with Lieut. Bowhill 13 mins., with Air Mechanic Bannister 11 mins., with Sgt. Vagg 9 mins., with Mr. King 7 mins., Lieut. Roupell 11 mins; Lieut. Glanville 8 mins.; Lieut. Watkins 9 mins.; Lieut. Bowhill 8 and 15 mins.; Lieut. Unwin 8 mins. On Maurice Farman 425, Capt. Millar 16 and 5 mins.; Lieut. Conran 20 mins.; Lieut. Marix 25 and 8 mins.; Lieut. Boyle 9 and 5 mins.; Capt. Salmond 11 and 4 mins.; Lieut. Harvey 12 mins. On Maurice Farman 428, Capt. Salmond with Sergt. Mead 15 mins., with Lieut. Soames 16 mins., with Lieut. Vernon 10 mins., with Lieut. Bigsworth 7 mins., with Lieut. Dawes 6 mins., with Lieut. Macdonnell 9 mins.; Lieut. Burroughs 19 mins.; Engr. Lieut. Randall 10 and 21 mins.; Major Trenchard 6 mins.

On B.E. 417, Capt. Salmond with Lieut. Vernon 7 and 30 mins.; Lieut. Soames 10 and 5 mins., and 26 mins. at 3,500 ft.; Lieut. Arthur 5 mins. and 17 mins. at 2,600 ft.; Lieut. Burroughs 8 and 9 mins

On Short 402, Sergt. Vagg 45 mins.; Lieut. Bowhill 10 mins.; Lieut. Oliver 15 and 20 mins.; Lieut. Roupell 5 and 15 mins.; Major Gerrard with Ldg. Seaman Ashton 10 mins.

R.F.C., Lark Hill.—Major Higgins two flights in morning on B.E. 203. First 20 min, second 30 min. at 1,700 ft. over Netheravon and Dorrington, with A. M. Martin; Lieut. Cholmondeley on Maurice Farman No. 214, 50 mins. at 3,000 ft., wind 20 miles per hour; Lieut. Anderson on Maurice Farman No. 214, 40 mins., at 2,100 ft.; Lieut. Carmichael, three flights on Maurice Farman 214, 14 mins., at 1,400 ft., second 11 mins. at 600 ft., wind 22 miles per hour, third, 10 mins., at 600 ft.; Sergt. Ridd, two flights of 6 mins., at 200 ft. and 300 ft., wind 22 miles per hour, 25 miles per hour.

R.F.C., Farnborough.—Conditions not good for flying until late in afternoon, when Lieut. Wanklyn tested Bréguet 213 for 5 mins. after minor repairs.

Brooklands.—At Bristol School, Messrs. Merriam and Bendall, each with Lieut. Robertson Dobie. Mr. Hall took brevet Lieut. Blatherwick up.

Salisbury Plain (Bristol School).—M. Jullerot on tractor biplane, then with Lieut. Higgins in 80 h.p. mono; Mr. England with Mr. Tod in side by side mono; M. Jullerot 50 h.p. mono, cross-country to Devizes, returning back in 55 minutes, then with Major Merrick and Capt. Landon in side-by-side mono. Mr. England took Mr. Tower in 50 h.p. for three-quarters of an hour; Major Merrick, Capt. Landon, and Mr. Tower up with Mr. England. Mr. England on single-seater mono. Mr. Harrison took Capt. Landon on biplane. Mr. Tod straights. Mr. Pixton with Major Merrick and Mr. Tower alone. Mr. England with Mr. Tod on side by side mono, afterwards with Major Merrick, Capt. Landon, and Mr. Tower. Mr. Pixton for first trip in side-by-side, and then on 50 h.p. tandem mono.

Brighton Shoreham.—At Avro School, Mr. Simms testing E.N.V., and later flew to Portslade and back, found fog and bumpy air. After lunch to Eastbourne, but in trying to get away on return made heavy landing on soft ground through engine failure, and bent machine.

THURSDAY, February 13th.

R.F.C., Farnborough.—No wind. Very misty. Mr. Gordon Bell on 100-h.p. Gnome Deperdussin mono for circuits. In afternoon the No. 2 Squadron machine left for north. B.E.218, Capt. Longcroft; B.E.217, Capt. Becke; Lieuts Waldron and Herbert and Capt. Dawes on Maurice Farmans. Capt. Longcroft returned owing to dense fog after flying for 1¾ hours. Lieut. Waldron returned after an hour for same reason. The three others landed near Reading.

Brooklands.—At Vicker's School, Mr. Lane straights on No. 3 mono, doing well. Messrs. Barnwell and Knight flying No. 5.

At Ducrocq School, Mr. Percy Muller took brevet after only a fortnight's tuition. Mr. Muller will be remembered as the engineer of the "Oozely Bird," and with Mr. Percival at the Aero Construction Co. As pilot and engineer combined he should be a valuable acquisition.

At Bristol School, Mr. Bendall with Lieut. Robertson Dobie. Mr. Merriam alone. Lieut Blatherwick making good turns.

Salisbury Plain (Bristol School).—Mr. England out with Major Merrick, Capt. Landon and Mr. Tower; with Capt. Landon in 80-h.p. mono. Mr. Pixton with Major Merrick and Capt. Landon in biplane. Mr. Harrison with Capt. Landon. M. Jullerot on tractor biplane and on 50-h.p. mono, then with Mr. Tod in side-by-side; also with Capt. Landon. M. Jullerot on 80-h.p. monoplane and 50-h.p. tandem.

FRIDAY, February 14th.

R.F.C., Farnborough.—Thick fog and a lumpy west wind about 15 miles. Mr. de Havilland a few turns on new war-plane, which flew well.

Hendon.—At Blackburn School, test flight by Mr. Blackburn in afternoon.

At Deperdussin School, Mr. Spratt circuits on No. 4, then handed over to Mr. Whitehouse for circuits. Lieut. Hawker good half-circuits.

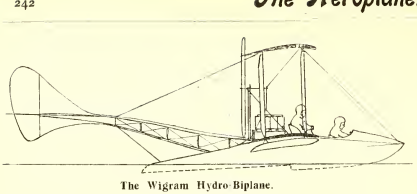
Brooklands.—At Bristol School, Mr. Bendall with Lieut. Robertson Dobie. Mr. Archer with Mr. Merriam and alone. Lieut. Blatherwick landing practice.

Salisbury Plain.—At Bristol School, Mr. England took Capt. Landon and Major Merrick on biplanes. Mr. England out in afternoon with Mr. Tower; Mr. Pixton with Major Merrick.

Liverpool (Waterloo).—Mr. Melly trying new propeller on school machine. Two new pupils joining shortly.

SATURDAY, February 15th.

R.F.C., Farnborough.—Mist and S.W. wind of 5 to 10 miles. On Bréguet 213, Major Raleigh circuits and Lieut.



The Wigram Hydro-Biplane.

Wanklyn two flights of 10 mins. each, after which Capt. Board and Lieut. MacLean straights, followed by Lieut. Chinnery. Thirty-five-h.p. Deperdussin also out with a Deperdussin pilot 40 mins., flying high.

Hendon.—W. H. Ewen School out at 9.50 a.m. Mr. L. Turner on 35-h.p. Caudron. Lieuts. Baily and McMullen straights and circuits. L. Lawford circuits at 100 ft. Test by M. Baumann. Messrs. Stewart, Prosser, and Torr straights on No. 2 mono.

At Blériot School, Lieut. Loftus Bryan and Messrs. Gandillon, R. Desoutter, and Williams were all at work.

At Blackburn School, after test by Mr. Harold Blackburn, Dr. Christie practising.

At Deperdussin School, Mr. Spratt on No. 4, then handed over to Mr. Valazzi, who passed his brevet tests (first music-hall artist to get a certificate on monoplane). Lieut. Hawker half-circuits, then figures of eight.

Wellingborough.—Mr. Gustav Hamel exhibitions before good number of spectators (more outside the field than in), finishing with fine spiral glide. Between two flights, Mr. Hamel kindly invited boys from Wellingborough Grammar School to view machine.

SUNDAY, February 16th.

Hendon.—At W. H. Ewen School, Mr. Lewis Turner several exhibitions on 60-h.p. Caudron.

At Deperdussin School, Mr. Spratt circuits in afternoon on No. 4.

At Grahame-White School, Messrs. Desoutter and Manton giving fine exhibitions.

Mr. Hamel on Mr. Weir's Blériot giving the spectators thrills.

Mr. Verrier on Maurice Farman as excellent as usual, taking passengers, including Mr. Holt Thomas, to 2,000 ft.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight flying No. 5 for benefit of Sunday crowd.

At Bristol School.—Mr. Merriam testing. Mr. Bendal with Lieut. Robertson Dobie.

For Mrs. Hardwick.

We are pleased to announce the following additional donations have been received on behalf of the fund for the widow of the late A. Arkell Hardwick :—

St. Clement Danes Lodge, No. 1351, £21 ; Woodgrange Lodge, No. 2409, £10 10s. ; Hardware Lodge of Instruction, £2 2s. ; Mrs. A. M. Peters, £3 3s. ; J. B., £2 ; J. L. Lake, 5s.

It may not be generally known that the late A. Arkell Hardwick was initiated into Freemasonry under the Egyptian Constitution, and therefore his little children are not eligible for election to the Masonic Schools, nor his widow for the benefits of the Benovolent Institution, and we are glad to see from the above list that some of the Lodges are trying to make up this loss by helping the fund in so generous a manner. Any further subscription will be duly acknowledged in this paper, and should be sent c/o The Aeroplane, 166, Piccadilly, W.

Mr. Hall's Return.

Mr. J. Lawrence Hall writes from Issy les Moulineaux :—"I am now with the firm of Clement Bayard and flying a 70-h.p. Gnome monoplane of that make at Issy les Moulineaux. This machine is the same pattern as the one that this week beat the world's speed record. We hoped to have a machine at Hendon in time for the Aero Show week, but do not know yet whether it can be done in time. . . . ."

The Wigram Hydro-Biplane.

The Wigram hydro-biplane is the result of the development by Mr. Wigram, of Sydney, Australia, of a design originally sketched by him in 1910. It is now in the course of construction at Cowes. The biplane consists of a stepped hydroplane, in which are placed the engine and pilot's and passenger's seats, arranged in tandem. A fuselage springs upwards and backwards from the boat and bears the tail plane and ladders. The main planes are stayed in the usual way, the lower plane springing from the boat and having stabilising floats at the wing tips.

Mr. Hucks in the North.

Never before has Newcastle-upon-Tyne had the opportunity of witnessing such fine flying as Mr. B. C. Hucks has been doing at Gosforth Park Aerodrome. The series of flights delivering the Robert Sinclair Tobacco Company's goods were to have begun on Monday, February 10th, but unfortunately a thick fog prevented Mr. Hucks from leaving the vicinity ; however, he made three short flights within the aerodrome. On Tuesday, he gave several thrilling exhibition flights, circling round the field at a great speed and at every height from five to a hundred feet. At one point he struck terror and dismay to the heart of a crowd who had assembled by the hedges of a cross-road. Approaching this group at great speed, he dived from a height of fifty to something like five feet from the ground. Needless to say, Mr. Hucks rose again long before there was any danger whatever, but the effect of his manœuvre upon a crowd who had, in all probability, never witnessed an aeroplane flight before, was picturesque in the extreme. During the afternoon, in spite of the fog, Mr. Hucks flew to Seaham Harbour. The journey was not pleasant. However, he delivered his cargo of tobacco successfully and stirred a crowd of 40,000 spectators to enthusiasm. Wednesday turned out beautiful and bright. At half-past one Mr. Hucks—and his tobacco—set off for Ashington, a place about 14 miles north. He climbed to a height of 2,800 feet in the course of his journey, and delivered his cargo before 10,000 spectators. The double journey took him 33 minutes. His landing was spectacular, for he came to earth from a great height in an unusually steep glide. On the same afternoon he delivered a further consignment of the weed at Blyth, 12 miles away, taking 31 minutes for the double journey. On Thursday he flew to Consett, 20 miles away, against a strong head wind, reaching a height of 4,000 feet and taking an hour and ten minutes for the double trip. There was no flying on Friday, owing to fog, and on Saturday an inlet valve broke and the pieces got into the crank case and put an end to further flying. Little interest has been shown in Newcastle itself, the Saturday crowd amounting to only 600 or 800 persons, but out among the villages the audiences were generally over 10,000.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.

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EMPLOYMENT.

CLERK (21), requires post in aviation works or office; any capacity where previous experience unnecessary.—Aviation Enthusiast, Box No. 465, The Aeroplane, 166, Piccadilly, W.

THOROUGHLY good Aeroplane Mechanics wanted, must be first-class hands with steel clip work.—Call or write, Sopwith Aviation Co., Kingston-on-Thames.

WANTED.—Wood Workers, accustomed to erecting and wiring aeroplanes. None but competent men need apply.—Apply, stating age, experience, and wages required, to Short Brothers, Eastchurch, Isle of Sheppey.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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F.	0 11 0	... ...	0 3 0
G.	0 19 0	... ...	0 6 6
I.	2 5 0	(Frame and surfaces only, carr. forward)	0 8 0

1913 Models. Wire surfaces, silk covered.

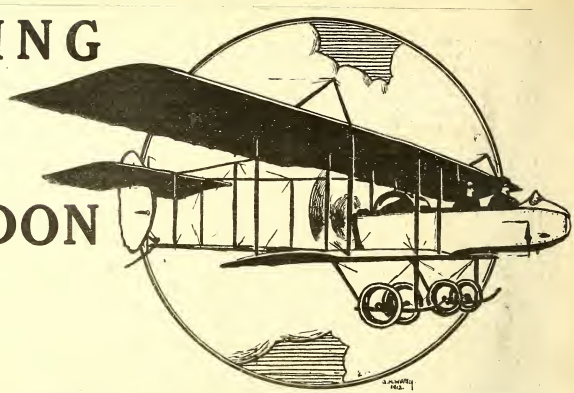
Hydro A.	1 5 0	... ...	1 0 0
R O G	1 5 0	... ...	1 0 0
D G	1 1 0	(Racing monoplane ¼ Miller. Will fly 600 yds.	0 17 6

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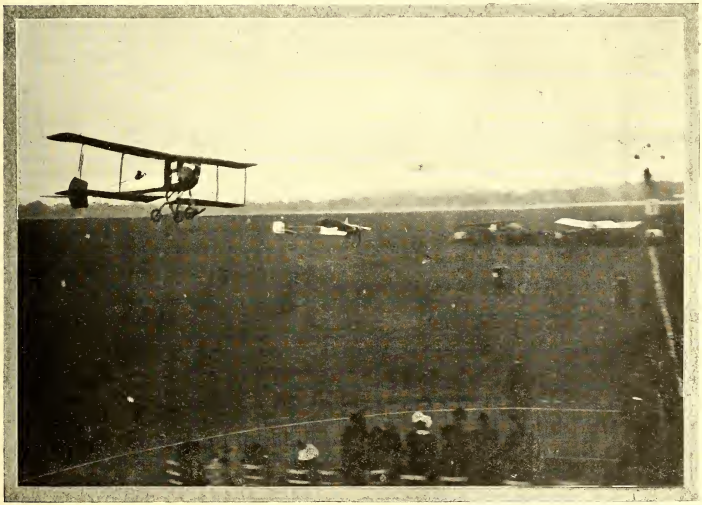
THE AEROPLANE

1d WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, FEBRUARY 27, 1913. No. 9.

THE FIRST RACE OF THE SEASON.



M. "Vitry" on the 110-h.p. Salmson-Bréguet beating Mr. Hamel on the 50-h.p. Gnome-Blériot by one-fifth of a second in the First Heat of the Race for the Aero-Show Trophy.



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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London.

The Admiralty and Aeronautics.

Whatever may be Mr. Winston Spencer-Churchill's politics, whether he be a Tory-Democrat or a Liberal-Imperialist, whether one regards him as a patriot who is willing to sacrifice his reputation for political consistency in order to do his best for his country, or as a self-seeking politician ready to change his party for his own advancement, there can be no doubt about his immense energy and efficiency. It is in no small measure due to these characteristics that the Naval Wing of the Royal Flying Corps is making such rapid progress. Mr. Spencer-Churchill has the best of all possible allies in the new Air Department at the Admiralty, whose head, Captain Murray Sueter, Director of the Air Department, is alive to the necessity of both dirigibles and aeroplanes for the Navy. To the aeronautical department the appointments have been announced from time to time of Commander Schwann, Engineer-Lieutenant Aldwell and Lieutenant L'Estrange-Malone. Commander Schwann and Lieutenant Malone are themselves pilots of considerable ability. The latter's flights during the military manœuvres last autumn will be remembered by all who followed the events at that time, and I gather from those who were present that the flight Commander Schwann made a few days ago when testing a Caudron biplane at Hendon showed him to be a pilot of more than ordinary skill, despite the fact that it was something like a year since he had flown.

How to Order Aeroplanes.

The result of the keenness of everyone connected with the aeronautical department of the Navy was shown last week when a number of machines were purchased at the Aero Show for the Naval Wing of the Royal Flying Corps. As has often been pointed out in these columns, the Navy believes in doing its own tests, and in following its own judgment regardless of outside influences and the opinion of experts. It has evidently realised that a large number of machines are required, and that so far as naval aviation is concerned everything must be to a very great extent experimental. Consequently, for some time past, machines of various types have been purchased, and as the result of experiments with all these types the collective store of knowledge is greatly increased.

The machines ordered at the Show evince a fine catholicity of taste and a lack of prejudice in favour of one particular type when compared with recent military purchases. Including a few machines on order before the Show opened the Admiralty should before the end of the financial year on March 31st, be in possession of the following machines, in addition to the thirty-five or forty already delivered:—

One Farman hydro-biplane, one Henry Farman biplane.

One Borel hydro-monoplane from the Show.

Two Deperdussin hydro-monoplanes, and two 80 h.p. land machines—one of each from the Show.

One latest type Bristol biplane 70 h.p. from the Show, and a new type hydro-biplane.

One Short 80 h.p. hydro-biplane from the Show, and sundry others now building.

One 80 h.p. tandem Blériot from the Show.

One 50 h.p. Avro—land-going—and one Avro hydro-biplane, the former from the Show.

One 80 h.p. Caudron hydro-biplane for immediate delivery, and probably others to follow if delivery can be given.

One Vickers biplane.

One Sopwith bat-boat and two Sopwith 80 h.p. land machines.

Two "B.E.'s" from the Royal Aircraft Factory.

One Cody biplane with 100 h.p. engine.

Altogether a total of at least twenty-one machines have been bought, all of which will be followed by further orders if those supplied are satisfactory, and, of course, the acceptance of these now on order is dependent on their passing the standard Admiralty tests, which are by no means easy.

It is recognised that these orders are only the beginning of things, and are only given so as to use certain money available before the end of the financial year. They in no wise affect purchases which are to be made out of next year's estimates.

Diverse Types and Opinions.

It is evident that we cannot for a long time to come even approximate to a fixed type of aeroplane for naval use, and opinions in the Navy itself are very diverse as to the ultimate type. There are those who believe that air scouts for the Navy must eventually become huge aero-hydroplanes capable of making long voyages on and over the water under their own power, and of remaining permanently on the water except when flying. There are others who believe that the scout will be an aeroplane of comparatively large size carried on a specially built mother ship and launched therefrom, returning to the deck after completing its work. There are yet others of the opinion that every warship from the size of a second-class cruiser upwards will carry several small single-seated machines which will be launched by catapult from the ship, and will be picked up from the water on their return.

It seems quite possible that all these types will

develop along their own lines, and that besides there may be special aeroplanes purely for coast defence work against hostile submarines and destroyers and able to carry explosives of sufficient weight and power to be of use offensively against such craft. Recognising that it must be some time before these different types are evolved it is obvious that the new Air Department is acting wisely in purchasing as many and as diverse types of aeroplanes as possible, and in acquiring in addition a number of comparatively ordinary types of land-going machines for the use of the Naval Aviation School at Eastchurch, for, as the various types of specialised naval machines are evolved it will certainly be necessary to have a large number of pilots trained by long experience in the use of ordinary machines so that they may be able to criticise and suggest improvements in the new types as they are produced.

Also, in case war should break out between this country and any other in the course of the next few weeks or months, it is equally necessary that the Naval Wing should have an adequately large supply of the most efficient aeroplanes procurable to-day, irrespective of type, to act as scouts along our coasts.

Dirigibles.

In addition to all these, it is necessary that one service or the other should acquire a number of the very highest class dirigible balloons. It is known that the Navy already has on order a Parseval from Vickers, Ltd., and an Astra-Torres, but dirigibles of a much larger size are required, and it seems quite probable that the handling of these ships will be made the affair of the Navy. It is, therefore, earnestly to be hoped that when the time comes for Mr. Spencer-Churchill to bring the Naval Estimates before the House of Commons a sufficiently large sum will be forthcoming for aeronautics to permit of the purchase or construction of several dirigibles of the largest size, together with the necessary sheds and equipment for them, as well as money for the establishment of a strong aeroplane corps with enough machines and material to equip adequately the numerous stations which the Naval Wing are establishing along the East coast.

One may rest assured that Mr. Spencer-Churchill, acting on the advice of his aeronautical department, will do his best to secure these desirable ends, and one can only hope that public opinion, as represented by members of all parties in the House, will enable him to put sufficient pressure on the Treasury to obtain whatever sum he may demand, no matter how large it may appear in the eyes of those permanent officials who do not even yet realise that, to quote Mr. Hobhouse, "Mastery of the air is as necessary to this country as the mastery of the sea."
—C. G. G.

The Royal Aero Club.

At the Committee meeting on the 18th inst., the following aviators' certificates were granted:—415, Assistant Paymaster E. B. Parker, R.N. (Short biplane, Royal Naval Aviation School, Eastchurch); 416, Lieut. M. W. Noel (Caudron biplane, Ewen School, Hendon); 417, 2nd-Lieut. R. M. Vaughan (Royal Inniskilling Fusiliers) (Bristol biplane, Bristol School, Salisbury Plain); 418, H. T. G. Lane (Bristol biplane, Bristol School, Brooklands); 419, F. F. R. Minchin (Bristol biplane, Eastbourne Aviation School, Eastbourne); 420, J. Crawford-Kehrmann (Bristol biplane, Bristol School, Brooklands); 421, Capt. W. G. H. Salmond, R.F.A. (Maurice Farman biplane, Central Flying School, Upavon); 422, Lieut. R. P. Ross, R.N. (Maurice Farman biplane, Central Flying School, Upavon); 423, Lieut J. R. B. Kennedy, R.N. (Maurice Farman biplane, Central Flying School, Upavon); 424, George Lee Temple (Caudron biplane, Hendon); 425, Lieut. D. A. Oliver, R.N. (Short biplane, Central Flying School, Upavon); 426, Lieut. T. S. Creswell, R.M.L.I. (Short biplane, Royal Naval Aviation School, Eastchurch); 427, Lieut. L. L. MacLean (Gurkha Rifles) (Bristol biplane, Bristol School, Brooklands); 428, Jules Teulade-Cabanes (Blériot Monoplane, Blériot School, Hendon), subject to permission of the Aero Club de France; 429, Lieut. R. G. D. Small (Leinster Regt.) (Grahame-White biplane, Grahame-White School, Hendon); 430, Julian B. Hall (Bristol biplane, Bristol School, Brooklands); 431, Lieut. C. F. Lee (King's Royal Rifles) (Bristol biplane, Bristol School, Brooklands); 432, Percy Maxwell Muller (Farman biplane, Aucrocq School, Brooklands); 433, Wallace Prowse Hodgson (Deperdussin monoplane, Deperdussin School, Hendon).

The Committee decided, in the cases of Non-Commissioned Officers, Petty Officers and men attached to the Military and Naval Wings of the Royal Flying Corps, to dispense with the usual fee of one guinea for aviators' certificates, and only make a nominal charge of one shilling.

A Lesson for Those in Authority.

Not the least interesting exhibits at the Aero Show were the cards displayed on the Deperdussin and Borel stands, the former stating that there were 80 Deperdussin monoplanes in use in the French army, and that there were 70 more on order; while the latter announced that there were 40 Borels in use in the French army, the last order being 18. It is a pity that similar cards were not displayed by the exhibitors of the Farman, Blériot, Caudron, Nieuport, and Bréguet machines, and that these cards were not on view when his Majesty the King, and afterwards Colonel Seely and the Advisory Committee of Aeronautics, visited the Show. Still, even the two cards shown indicate that two firms alone—and those firms which have by no means supplied the bulk of the French orders—have actually delivered more machines to the French army than the British Navy and Army have in their possession or on order at the present moment.



Mr. H. Blackburn (Blackburn monoplane, 50-h.p. Gnome) winning the second heat of the "Aero Show Trophy" Race.

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The Trend of Opinion.

BY W. E. de B. WHITTAKER.

There is no rapid change in the progress of a science or an art. None can say that this or that day marked the transition from one style to another, one epoch to a later. Rome did not fall from its high estate in a day. Centuries saw the spread of clogging luxury before the eagles of the Empire lay down to die. The history books arrange the tale of existence with a foot rule, because man's brain is small and is confused by the majestic sweep of the ages. Yet in truth all change of import is as gentle and imperceptible as the flow of a placid river through sunlit meadows. Men are born, they live their little day, and when night comes they return to the earth whence they came. But human life does not cease. Its temporary casket wears out and another takes its place. That is all.

It is difficult for those who live in the present rightly to read the plots of human activity. One cannot say with definity where vagrant thought will lead us in a week, a day, or an hour. No course, no trend of thought is the product of one man's unaided effort. His views of life, his constructive or destructive ability, his very daily life are moulded though he knows it not by a thousand little tendrils of thought drawn from others. One bears to some extent the stamp of the society in which one lives. It could not well be otherwise. Therefore one's productions show in their form the result of the work of the brains of others, however indirect may be the manner of it. And it would be well if humanity could realise this more clearly.

Thus in an estimation of the trend of opinion on the design of aeroplanes an infinity of causes and influences must be considered. Nothing that is useful comes into existence without the excuse of necessity. Even journalists and stockbrokers are essential parts of human society just as is the public executioner or the Official Receiver. One cannot, therefore, construct any key to the future without due estimation of the influences at work. Wise tradesmen sell the goods desired by the best customer, and their wholesale purchases are influenced by this rule. There is no place where this is more clearly illustrated than the Olympia Show. The customer has certainly affected design.

There is no trade of any account among civilians. Government Departments alone can buy sufficient to make the work of design and construction profitable. The War Office and the Admiralty both desire certain points on machines purchased for their use, and wise constructors, whatever may be their personal predilections, bow to the inevitable.

A little more than two years ago an unbiased observer at the Paris Show would certainly have prognosticated the disappearance of all those types of aeroplanes in which the engine was placed behind the pilot. Yet if one accepts the delusive evidence of percentages, such types are on the increase rather than fading away into the bourne of things forgotten. The theory that danger exists for the pilot in case of a bad landing on an "engine behind" machine has, if statistics can be relied upon, nothing to back it. But apart from that there are other considerations to be taken into account. On a tractor biplane the observer is handicapped by the slip stream of the propeller, by minute particles of oil, and by an obvious obstruction of forward view. In the other type of biplane the view forwards, the most useful view in reconnaissance, is uninterrupted. The observer can also be protected by windows of some safe transparent substance without fear of its becoming clouded with oil. So far as aerodynamic efficiency is concerned there is little to choose between the two types. The Maurice and Henry Farman biplanes, the Vickers, the Sopwith, and the "Wight" are all examples of the engine behind types.

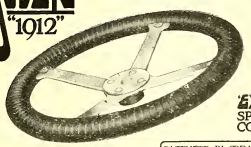
At the Paris Show of 1910, the most representative of shows, as in it the ideas of the different schools of thought had taken concrete form, there appeared a monoplane designed and built by one of the pioneers of aviation, M. de Pischoff. The engine, a four cylinder vertical petrol motor, was placed well forward underneath the main plane. Behind this sat the pilot and passenger side by side as in a motor-car. A shaft ran from the engine beneath the seats to a point below the trailing edge of the plane. This shaft drove through a chain a large propeller mounted on a bearing through which the upper member of the fuselage ran. This machine had much to recommend it from the military point of view. A gun, if so desired, could be mounted above the motor. Reconnaissance was simple. Nothing broke the view on any side. But the machine had grave aerodynamical faults. The centre of gravity was too low, said the critics, and they may be right, though the theory is debatable. It was too heavy, undeniably, and it was fitted with a motor incapable even of demonstrating practically the principles of an internal combustion engine. The plane camber was not one inspired by genius. All these faults could have been remedied had money and public support been at hand. But to-day, years later, the idea has undergone no development.

A direct descendant, conscious or unconscious, of this machine is now on show at Olympia. The Grahame-White warplane is a step further on the road



The new Blackburn monoplane recently tested near Leeds by Mr. Harold Blackburn.

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"SHELL II." will be on sale after Monday, February 24th.

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of thought which owes its practical inception to M. de Pischoff. Many of the latter's difficulties have been overcome. The biplane construction alters the centre of gravity. The engine is reliable, and the plane camber is possibly superior. Its trials will be watched with interest. This machine possibly represents the type of the future. To be more definite than that would be absurd, for none can tell along what strange paths human thought will wander in the days to come.

There is a notable increase in the use of steel for detail work. (The percentage of steel in general construction remains about the same—the Vickers being the only steel built aeroplanes in the Show.) Aluminium has almost disappeared. Where once even control levers and elevator hinges were made in the light treacherous metal, steel has now usurped the place.

Now that it is a matter of no difficulty to design a machine which will fly, and more attention is being paid to details, stranded cable has taken the place of plain wire where extra safety is desirable. On most machines all important wires are duplicated, though oddly enough in several cases both wires or cables are attached to a single eye-bolt. Duplication must be thoroughly carried out to be effective.

Military necessity has caused attention to be given to the question of quick assembly and dissembly. All manner of "quick-release" attachments appear on various machines, and as is usual in Great Britain complication has ousted the simple and the obvious. The English designer of the new school avoids the obvious as he might the devil.

More attention is given to the provision of comfortable seats for both pilot and passengers. There are on most machines elaborately fitted instrument boards so that the pilot may not be bored when on a long flight. He can tell everything from his compass course to his height above his starting place at a glance. In one machine a gaudily decorated green glass, suitable for a bouquet of marsh anemones, is screwed gently to the polished dashboard.

Landing chassis are in the majority of cases simpler in design and construction. Skids, the refuge of the heavy-handed, have disappeared in many cases.

But each visitor to the Show will have observed tendencies appealing particularly to him, and it is only possible to give in a fragmentary form the sum of one's own impressions. None will deny the high value of the Olympia Aero Show which closed last Saturday night.

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty Appointments, February 20th :—

Royal Naval Reserve.—James Lindsay Travers has been appointed Sub-Lieutenant in the R.N.R., with seniority of February 19th, and to "Actæon," additional, as Flying Officer, Naval Wing, Royal Flying Corps, to date February 19th.

From the "London Gazette," February 22nd. War Office, Regular Forces :—

Royal Flying Corps, Military Wing.—Second Lieut. Vivian H. N. Wadham, 5th Batt. King's Royal Rifle Corps, to be a Flying Officer, and to be seconded; December 5th, 1912.

Royal Regiment of Artillery.—Royal Horse and Royal Field Artillery—Capt. to be Maj. : John D. B. Fulton, and to remain seconded; January 16th, 1913.

Major Fulton was, so far as one can gather, the first officer now in H.M. Service to learn to fly. His early work was done on a 28-h.p. Anzani-Blériot, which was his own property, and his first flights were made at Lark Hill, where the Military Aeroplane Competition was held. He took his certificate (No. 27) on Mr. Cockburn's old Farman biplane, and the brevet was granted on November 15th, 1910. He is now an instructor in flying at the Central Flying School, Upavon.

FRANCE.

Military aviation in France is still, it appears, under the domination of the engineer branch of the Army. Competent critics are agitating now for such a reorganisation as would separate the two services for all time.

At the present moment there are about 580 effective aeroplanes in the French Army. In addition to the 200 machines existing in the beginning of 1912, over 1,000 have been purchased during the year. Some idea of the average wastage per annum in peace times can be estimated from this. Eighty-nine of these effective machines are Henry Farman biplanes. It is impossible to obtain accurate figures from other makers.

M. Damberville, a sous officier, took his military brevet on February 16th by flying on a Henry Farman biplane over a course from Camp de Chalons to Douai and back. He maintained an average height of 1,200 metres despite the thick fog.

The Lyons centre has been very active during the past few weeks. In the week before last four Maurice Farman biplanes and one Blériot monoplane (50-h.p. Gnome) arrived to be attached. Captain Aviator Carlin, whatever the weather may be, makes daily excursions of considerable length in the vicinity of Lyons. Two of his officers are preparing to take their superior brevets.

Lieutenant Aviator Maillert has just concluded at Mailly a series of experiments in firing a mitrailleuse from a Henry Farman biplane (100-h.p. Gnome). It is said that great success has attended his efforts.

During last week ten Blériot monoplanes were delivered to the aviation centre at Avor, three to the Pau centre, one to Maubeuge and one to Buc.

The Belfort escadrille (Blériot monoplanes) have throughout the week made lengthy reconnaissances of the frontier in strength. Each officer flies over his own section, all the reports are collected at the end of the day and a composite report is forwarded to the G.O.C.

The Moroccan section of the aviation corps has done considerable work during the military operations of the past few weeks. In the beginning of the month Lieutenant de la Morlais (Blériot monoplane, 50-h.p. Gnome) flew over the column engaged in the attack on Dar Anflous. Quartermaster Feierstein (Blériot monoplane, 80-h.p. Gnome) carried Colonel Girodar (Chief of Staff at Casablanca) to Ben Ahmeud, that he might inspect the post. Lieutenant Jolain (Henry Farman biplane, 50-h.p. Gnome engine) flew on the 20th from Biskra to Touggort and back without incident. This flight qualifies him for his superior brevet.

Several petty thefts of dynamoes, tools and small fittings have taken place on several of the military aerodromes at Saint-Cyr, Epinal, Bordeaux, Orleans, and Versailles. An arrest has been made, but it is unlikely that thefts could be made by one man in so many diverse parts of the Republic.

Lieutenant-Aviator Personne, of the Epinal centre, flying a Borel monoplane (80-h.p. Gnome) arrived at Camp de Mailly at two o'clock on February 22nd. Lieutenant-Aviators Ronin, Pecquet and Battini and Quartermaster Quennehen, all on Borel monoplanes, made several long flights in the district of Epinal and along the frontier.—W.

GERMANY.

The Schütte-Lanz dirigible recently injured in landing is now repaired, and will be fit for flight in a fortnight.

A further demand of 20,000,000 marks is to be made on behalf of military aeronautics during the year to come. Whether the Budget Committee will pass it remains to be seen.

It is intended to install an aeronautic station at Mannheim.

The town of Dresden has subscribed 1,000,000 marks towards making Dresden an aviation centre.

There is some delay in the formation of long-promised military aeronautical stations owing to the lack of money. Posen has three sheds and barracks. At Konigsberg and Thorn nothing will be done until April. Dantzig, Elbing, and Allenstein are all providing grounds and hangars.



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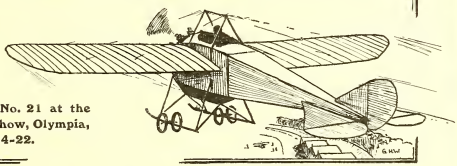
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—to fast Monoplanes

On or about February 14th the naval Zeppelin "L.1." made a flight of twelve hours with thirty men on board. The starting place and return station was Johannisthal.

A new 80-h.p. hydro-triplane has just been delivered at the naval aviation station of Putzig. This machine is designed to fly at a speed of 63 miles an hour.

Certain manœuvres in conjunction with dirigible balloons have taken place recently near Cologne. No announcement with reference to them has been made. The Parseval II was most active, flying daily.

The German Budget, if rumour can be relied upon, has set aside £1,800,000 for the development of naval and military aeronautics during the coming year. £1,000,000 of this is for the army. A further sum of £32,000 raised in subscriptions must be added.

It is stated semi-officially that the Ministry of War has placed further orders for three Zeppelins, one Schütte-Lanz and one Parseval. At the same time, the Ministry intends to make experiments with fifteen different types of German-built aeroplanes.

Lieutenant Aviator Wejer of the Metz aviation station rose to a height of 9,000 feet on a biplane accompanied by a passenger. This is a German Army record.

One learns that the Prussian War Office intends arranging a contest in May for aeroplanes capable of running along the roads by their own power, and is in communication with manufacturers interested in this hybrid machine. Entries close on May 1st, which is not giving the makers much time to design and construct an apparatus complying with the War Office's requirements, especially at this busy time of the year. The propositions call for a machine able to run along the roads at a fair speed, to be converted into an aeroplane within two hours and dismantled within one, besides this the new constructions must be good flying craft as well.—B.

AUSTRIA.

The Ministry of War has placed orders with a Hungarian firm for fifteen aeroplanes.

Orders have also been placed for 50 monoplanes from various establishments.—W.

BELGIUM.

At Louvain, on February 16th, Lieutenant-Aviator Demanet was married to Mlle. Beeson. After the ceremony and the consequent meal, at five in the afternoon the aviator, with his bride as passenger, flew to Antwerp on his Henry Farman biplane.—W.

ITALY.

Bologna, Treviso, Busto, and Cuneo have been fixed upon as stations for detachments of the Aviation Battalion, and barracks for housing officers and men of the Specialisti Engineers will be erected in each of the said towns as well as the necessary sheds for their flying machines.

On February 10th, the officer-aviators of the Aviano School flew 600 kilometres across country, 250 kilometers being done on an old model 50-h.p. Blériot by Lieut. Humbert Clerici in the course of a return flight from Bologna.

The despatching of Captain Falchi's Blériot from Aviano to Rome is announced. This machine is considered to have been the first to fly in Libia and will therefore be preserved as a national war relic.

The non.-com. officers under instruction at the M. Farman School outside Turin, where Capt. Prandoni is in command, put in a lot of hard work, and several fine flights have passed almost unnoticed among the more brilliant evolutions of their superior officers at Mirafiori and the other detached camps around the city.

Major Piazza in a most interesting article on school curriculum pleads very strongly for the teaching of flying to be exclusively carried out on hydro-aeroplanes, and this chiefly on the score of economy, of safety, and of brevity.

Captain Andreani, commanding the Malpensa section, has succeeded in making satisfactory communications with his headquarters by means of a wireless installation applied for the first time to a fast passenger monoplane, an 80-h.p. Nieuport.—T. S. H.

The national subscription for the purchase of aeroplanes and dirigibles which has just been closed amounts, in all, to £762,000.—W.

DENMARK.

Prince Axel of Denmark, Lieutenant in the Danish Navy, cousin of two emperors and a king, has taken his pilot's certificate with distinction.

Lieutenant Aviator Birch of the Army has offered to accompany M. Amundsen on his intended expedition to the North Pole.—W.

BULGARIA.

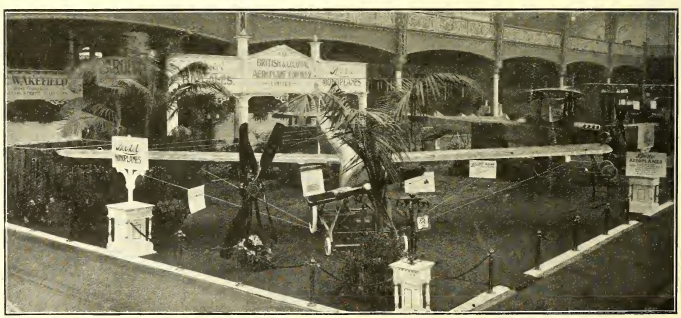
Lieutenant Aviator Nicolas, a Russian attached to the Bulgarian Army, was forced to descend whilst flying over the Adrianople lines. He was at once made prisoner.—W.

CHINA.

The Chinese Government has purchased a large number of Caudron biplanes. Three of these, fitted with 45-h.p. Anzani engines, passed their tests and were dispatched from Crotoy early last week.—W.

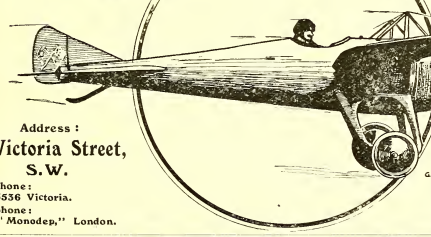
U.S.A.

The bill creating a military aviation corps for the National Guard has been amended so as to include hydro-aeroplanes for the use of the Naval Militia.



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Paris-Madrid	1er VEDRINES	(Sole arrival).
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Daily Mail £4,000 Prize	2: VEDRINES	
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	1912.	
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Circuit de Paris	1er DAUCOURT	(850 km. in one day).
Tamise Hydro-aeroplane Contest	1er CHEMET	
Traversée de l'Adriatique	CHEMET	(Venice—Trieste—Venice).

ASK FOR PARTICULARS AND CONDITIONS OF LEARNING.

The Montrose Flight.

The flight to Montrose is progressing as favourably as might be expected. On Wednesday, February 19th, in spite of rough weather, Captain Longcroft ("B.E.") and Lieut. Herbert (Maurice Farman) arrived at Towcester from Oxford and Aylesbury, respectively, thus completing the first stage of their flight. At Towcester they met Captain Becke ("B.E."), who is in charge of the flight and who had been awaiting his comrades since Monday.

On Wednesday, also, Captain Dawes (Maurice Farman) started from his last landing place near Oxford, but descended a mile and a half short of Towcester, as his engine was pulling badly. In landing he broke one of his planes against a tree through swerving to avoid a boy. Lieutenant Waldron (Maurice Farman) also failed to make Towcester on Wednesday on account of engine trouble; he started from Oxford and got as far as Ardley, sixteen miles short of his destination.

On Thursday the three leaders, Captain Longcroft, Captain Becke, and Lieutenant Herbert, in the order named, completed the second stage and landed in the designated field at Kelham, near Newark, Captain Longcroft taking two hours over the journey. Lieutenant Waldron reached Towcester from Ardley during the afternoon; Captain Dawes remained near Towcester attending to his damaged wing.

On Friday morning Lieutenant Waldron flew from Towcester to Newark, arriving there before the leading trio left for York; he remained only long enough to replenish his tanks and then set off on the third stage of his flight, arriving safely at York, having thus completed two stages in a single day. Captain Longcroft and Lieutenant Herbert both reached York in safety. Captain Becke waited at Newark until Captain Dawes (of the broken wing) arrived from Towcester in the afternoon. In landing Captain Dawes again had the misfortune to damage his machine, so Captain Becke had to start for York unaccompanied. He was forced to land, however, at Doncaster owing to engine trouble so serious that he had to telegraph to Farnborough for a new motor.

On Saturday Captain Longcroft, Lieutenant Herbert, and Lieutenant Waldron completed the fourth stage, from York to Newcastle-on-Tyne. The unfortunate Captain Dawes set off from Newark, but was brought down by engine trouble after a flight of only eight miles. Captain Becke remained at Doncaster awaiting his new engine.

On Monday, Captain Dawes flew from York to Newcastle and there joined the three leaders; he experienced some difficulty in finding Gosforth Park owing to ground fog, and landed first of all on a golf links. Captain Becke flew from Doncaster, via York, to Newcastle, and encountered the same difficulty, having to land four times to inquire the way.

By Monday night, therefore, all five pilots were together again, having covered 280 out of the 400 miles in a straight line, between Farnborough and Montrose, though the route to be taken makes it 200 miles from Newcastle to Montrose.

FOREIGN NOTES.

France.

On February 16th Henry Farman opened his "hydro-drome" at Boulogne-sur-Mer. On that day he arrived from Buc on a Henry Farman biplane (80-h.p. Gnome), accompanied by M. Fischer. After having tested the champagne supplied by the Aero Club in a large shed, he superintended the fitting of floats to his machine, and before four o'clock he was in the air making splendid flights over the beach. He will continue to practice at Boulogne (his birthplace) until the opening of the Monaco meetng.

M. Maurice Farman's Sunday excursion on February 17th was to Chartres, by way of Rambouillet. His passenger was M. Bradel. On his return journey he made a long circuit and reached Buc late in the afternoon.

M. Eugene Renaux is now at Etampes preparing to attack the duration record for a flight with a passenger recently created by M. Guillaux. M. Gobé of the Nieuport firm also has intentions in regard to this record. He has been at Issy les Moulineaux training on a Nieuport monoplane fitted with a 60-h.p. Clerget rotary motor. He flew to Villacoublay on February 22nd, and from thence to Juvisy on the 23rd.

M. Roland Garros, who is now on the Riviera, flew on February 22nd from Nice to Monte Carlo and back on a Morane-Saulnier monoplane (80-h.p. Gnome). M. Leon Morane is himself at Nice.

Mlle. Helène Dutrieu, one of the first women to fly, has been awarded the ribbon of the Legion of Honour. Her early experiments were on a Demoiselle, with which, however, she never flew. Afterwards she attempted to fly on a Sommer, and later took to a Farman. It will be recollected that she appeared with the troupe of French aviators who visited Doncaster and Burton, but in those days she never flew without a male passenger to take charge in case of difficulties. Afterwards she really learned to fly by herself, and made a number of quite good flights on a Farman, her best performance being on December 31st, 1910, when she won the Coupe Femina, on that occasion flying for something like three hours. She again won the Coupe Femina in 1912 with a flight of 150 miles. She has also flown in Spain, Italy, Belgium, Holland, and the United States.

Germany.

A most up-to-date coat of arms is that which the growing industrial town of Leichlingen, near Elberfeld, Germany, proposes to adopt, showing a silver dirigible in a blue field. Leichlingen is the spot where the late German aeronaut Oscar Erbsloh constructed his hapless airship with which he and a party of friends met their fate.

A sad accident at Leipzig-Lindenthal has robbed German aviation of a most enthusiastic pilot in Wilhelm Lenk, the Berlin telegraph official, who was sent to Leipzig by the postal authorities to learn flying with a view to introducing an aerial mail service into the German Colonies. Lenk had been warned not to mount too high as the wind was very gusty, but unhappily disregarded the warning, and after attaining an altitude of about 700 metres prepared to descend. In doing so he throttled the engine too much and dropped very rapidly. He apparently believed the machine was flying at too flat an angle and depressed the elevator so violently that the aeroplane turned a somersault and threw him out from a height of 60 metres. Lenk was dead before assistance arrived. The apparatus came fluttering down and was hardly injured. A commission to investigate the accident has declared that Lenk must have lost his head at the vital moment. He was to have left for German East Africa in the course of the summer.

Owing to Sweden's inability to come into line with Germany, Denmark and Norway on various vital questions, the international circuit that was to embrace all four countries will not take place this year. It is hoped that an arrangement can be arrived at for 1914.—B.

Austria.

Austria has lost a most capable military aviator in the person of Lieutenant Mittner, who met with a fatal accident whilst testing a new Lohner-Pfeil biplane at Fischamend, near Vienna, on February 17th. The cause has not been fully established, but the aeroplane came down suddenly, pitching Mittner out at an altitude of aboue 60 metres . Mittner, who was the first to cross the Semmering range from Vienna to Gratz, had once before barely escaped death, as he was Mosca's passenger at the time of the smash which killed Mosca, whilst he himself incurred severe concussion of the brain.—B.

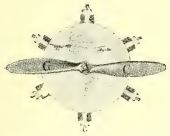
Italy.

In case Major Piazza's non-official opinions expressed so strongly should not receive the attention which they deserve, I consider it almost a duty to give further and more detailed notice of them. He claims firstly the economy ensured by the use of waterplanes for school work. Lest this should not seem clear, I will mention the items of the rent of the aerodrome, the damage to landing chassis (even when the aerodrome has been levelled), and absence of farmers' claims. Under this head, too, he considers a breakdown motor-boat cheaper to run than a car. As to the safety of the pupil and the machine, the nature of water and the more regular aircurrents found over it are alone guarantees of this, while the brevity of the instruction course is the natural outcome of the more favourable conditions found over water, not the least of which, in the opinion of the officer, would be found the

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lessened fatigue and strain allowing longer practice. Anyhow, a country like this, with so much water, both lakes and sea, and so little pasture land, might well consider the advice seriously.

As to the flying grounds; from Mirafiori the Asteria firm send me particulars of their new single-decker, the folding tail and quick dismantling of which show it to be well thought out. In its general lines it is reminiscent of two of the faster French monoplanes. Unfortunately, Nosari, the firm's head mechanic and a steady passenger carrier on their biplanes, aspired to test the new model, the speed of which and its quicker response to control were his undoing. He got the machine vertical and was killed instantly.

Faccioli, too, has got his monoplane into flying trim, with, of course, the faithful S.P.A. engine. At Turin, too, as was to be expected, the F.I.A.T. motor has been shown an aerodrome.

At Vizgola, Caproni and Faccanoni are hoping very shortly to deprive our only Italian lady pilot of her honoured position. A consolation banquet is being offered to Signorina Ferrario, who has been flying regularly on her Caproni at the school aerodrome. These machines, at the time of writing, hold three international records, a climbing feat having been added since your last mention of them, by Borgotti, who, on the 80-h.p, climbed with a passenger to 1,000 metres in 6 minutes.

Caproni has, too, a new motor of his own build on hand.

From Milan comes grumbling that the city has not been chosen as a military flying station. If Rome was abandoned by the authorities on account of the prevalence of wind, then Milan, with its fog and perfidious climate (see also the egregious Baedeker), should certainly be steered clear of in like manner, if only for economy of men and machines.

I note in the revised conditions of the military trials the expressions hay-fields, corn-fields, etc.; so that I opine a further postponement till June.—T. S. Harvey.

Signor Maggiore, the chief pilot of the Caproni School at Milan, was flying on February 15 at Malpensa, when, at a height of 1,000 feet, a cylinder of his motor flew to pieces. He was thus compelled to land in an unpleasant field, where he overturned and was slightly injured.—W.

Spain.

The enthusiasm of royal blood for aviation in Spain is apparently increasing. Last week the Infante Alphonso of Spain accompanied M. Perreyon on a long flight over the aerodrome of Cuatro-Vientos. The machine was a Blériot monoplane (80-h.p. Gnome).

Cuba.

Senor Domingo Rosillo is on his way to Cuba with a Morane Saulnier monoplane that he may, by the magnificence of his flights, astound the simple-minded inhabitants of the Antilles.

Cambodia.

M. Kouzminsky, whose flights on a Blériot monoplane ravished the Celestial soul at Pekin, Tonkin, and elsewhere, in the ancient Empire of the Dragon, is now in Cambodia. On January 15th, at the capital Pnom-Penn, in the presence of King Sisowath, the officers of the Court and 40,000 inhabitants, he made several soul-stirring ascents into the empyrian.

Annam.

Marc Pourpre has lately been making some impressive flights on a Gnome-Blériot monoplane at Saigon. The Annamites, it is stated, are greatly pleased.

U.S.A.

The sporting enthusiasts of America have taken to water flying with characteristic energy, and a certain section of them, connected with the Aeronautical Society of that country, are now applying themselves to the evolution of codes and standards. It is proposed to hold a "season" off the coast of Staten Island during the coming summer. The "stud" will consist of six identical water-biplanes of proven efficiency, probably equipped with single floats, and these machines will be raced against each other each Saturday afternoon. One of the most attractive items upon the programme, which will demand considerable skill on the pilot's part, is a hurdle race, the hurdles being represented by captive balloons; the hurdling is to start from the water's surface, and, the first balloon having been surmounted, the water must again be touched before the next obstacle is attempted.

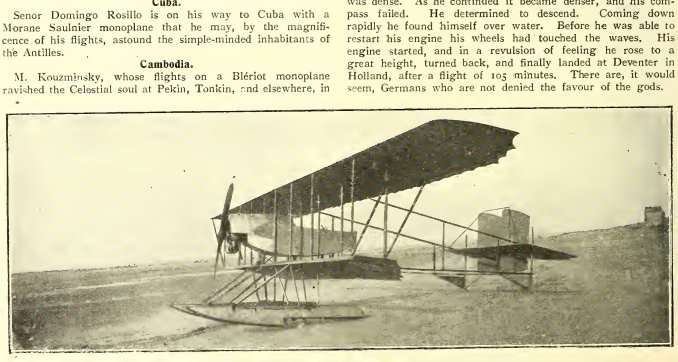
Moonlight passenger flights are also proposed, though one hears no word of three-seated machines.

Mr. Silas Christofferson, the gentleman who pursued—by aeroplane—an escaped convict and caught a duckshooter instead, has been adventuring himself again. On this occasion he took up a photographer with the innocent object of photographing certain hidden batteries, "asking no permission to." He got the photograph and it was published in a San Francisco newspaper. The military authorities are wroth, but hitherto have taken no action. The naïve irresponsibility of the thing is rather taking.

A certain Mr. W. Heskins, of Wisconsin, U.S.A., is taking up aviation with the object of interesting the postal authorities of his country in the carrying of mails by aeroplane as a serious proposition.—A. B.

An Averted Tragedy.

On February 23rd, Herr Suvelack, director of the Kondor Aeroplane Works, and an aviator of some skill, started from Essen on a Kondor monoplane with the hope of reaching London in the day. At the beginning of his flight the fog was dense. As he continued it became denser, and his compass failed. He determined to descend. Coming down rapidly he found himself over water. Before he was able to restart his engine his wheels had touched the waves. His engine started, and in a revulsion of feeling he rose to a great height, turned back, and finally landed at Deventer in Holland, after a flight of 105 minutes. There are, it would seem, Germans who are not denied the favour of the gods.



The Caudron hydro-biplane with land wheels (50-h.p. Gnome engine).

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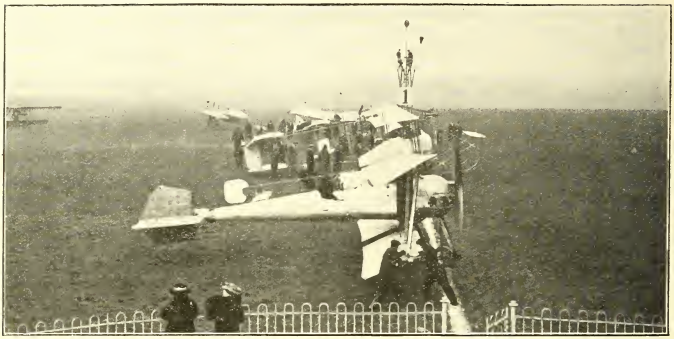
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The Aero-Show Trophy.



The Start for the First Heat of the "Aero-Show Trophy." M. "Vitry" in the foreground.

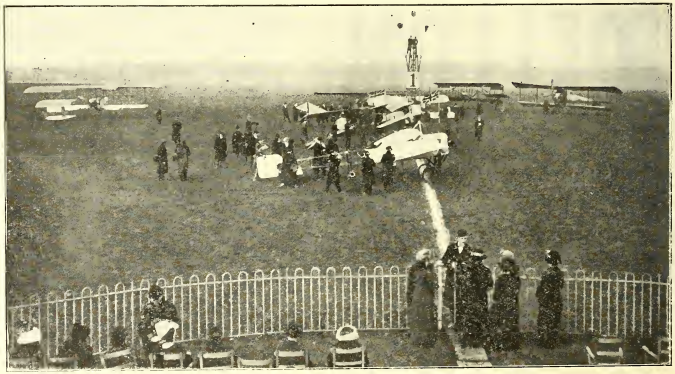
The first event of the season at Hendon produced the most thrilling racing yet seen. In both heats and in the final of the competition for the Aero Show Trophy it was almost any-one's race till quite near home, and the finishes for places were most exciting.

In the first heat Mr. Turner, on the 35-h.p. Caudron, retired after being passed and seeing pursuit was hopeless; but the fight between Messrs. Verrier, "Vitry," and Hamel went on right to the post, all three crossing the line inside four seconds. From where I was standing on the judge's box it looked as if Hamel beat "Vitry" by about the pitch of his propeller, but the official result was given thus:—

Verrier (28 secs.),	1st—time,	8 m. 41 s.
"Vitry" (scratch),	2nd ,,	8 m. 44 s.
Hamel (5 secs.),	3rd ,,	8 m. 44 1/5 s.
Manton (2 m. 18 s.)	— ,,	8 m. 59 s.
Turner (1 m. 58 s.)		(retired).

Mr. Hamel flew the whole last lap with the wheels of his Blériot flicking the grass, so as to escape the back-wash of M. Verrier's Farman; while "Vitry" flew wide and high, doing the most appalling banked rising turns.

In the second heat Mr. Blackburn, flying much more wisely than usual and keeping his tail moderately high, held his lead to the finish. The handicapper, unfortunately, over-estimated



The Start for the Second Heat. Miss Trehawke-Davies' Blériot is the nearest machine.

the speed of the 60-h.p. Caudron, which Mr. Gordon Bell flew excellently, though unable to hold his own against Miss Trehawke-Davies' new 70-h.p. Blériot, on which she was a passenger with Mr. Valentine, and against Mr. Desoutter on the old G.B. 50-h.p. Blériot, which passed him in the first lap. The heat resulted thus :—

Blackburn (2 m.), 1st—7 m. 49 s.
Valentine (scratch), 2nd—8 m. 2 s.
Desoutter (13 s.), 3rd—8 m. 16 s.
Gordon Bell (40 s.) (retired).

The heats were flown over four laps and the final over eight, so there was a long fight for the trophy itself. After being in doubt right up to the last lap, M. "Vitry," on the big 110-h.p. Salmson-Bréguet, caught and passed the Maurice Farman, the tandem Blériot making up ground well, but seemingly losing at the corners owing to the extraordinary banking of the Bréguet, which became steeper and steeper every lap. The final placing was :—

"Vitry" (38 s.), 1st—14 m. 57 s.
Verrier (1 m. 34 s.), 2nd—15 m. 12 s.
Blackburn (3 m. 20 s.), 3rd—15 m. 12 4/5 s.
Valentine (scratch), 4th—15 m. 14 s.

M. "Vitry," as he elects to be called, has been doing excellent flying on the Bréguet at Hendon recently, and only a week before this race he had the same machine up in a wind so strong that it blew it into the railings when he was starting. Nevertheless, he went up and found the wind steadier aloft, though at times he was unable to make headway against it. This flight is reckoned by those at Hendon to be one of the finest ever made there.

Between the heats and the final of the big race Mr. Gates gave a capital exhibition of what a spectator described as "rag-time" flying, and before and after the race Messrs. Turner and Bell on the Caudrons, Mr. Spratt on the little Deperdussin, Mr. Desoutter on the Blériot, Mr. Manton on the G.-W., Mr. Valentine on the tandem Blériot, M. "Vitry" on the Bréguet, and M. Verrier on the Maurice Farman, all flew magnificently. Many passengers were taken up, among others Mr. Bell taking Miss Wheatley on the Caudron.



M. "Vitry" banking the big Bréguet which won because of the pilot's clever cornering. This machine is the same one which was designed for the Military Aeroplane Competition, but was not finished in time.

The weather was excellent, though cold, and for the first time on record the wind, which was decidedly puffy, was blowing down the finishing straight, so that the machines got off head to wind. Altogether it was a great day's sport, and if only the weather-clerk is kind, the London Aerodrome should have a brilliant season before it, for nowhere can one see such a variety of machines and such keen competition between pilots of such high ability.—C. G. G.

Aeroplane Engines and R.A.F. Tests.

The following letter has been communicated by Mr. Mervyn O'Gorman, Superintendent of the Royal Aircraft Factory, to the Press :—

"It may be useful that constructors of engines intended for aeronautical purposes should be informed that I am prepared to test at the R.A.F. any suitable engines. An impression having arisen, perhaps from the terms of the Alexander Prize Competition, that such engines must be submitted to a 24 hours' full load test in order to be considered, I beg that you will assist in removing this impression. It is a goal to be aimed at that such an engine shall be capable of running without overhaul for a total of 24 hours, and it is to be appreciated that aeroplane conditions involve running up somewhere about full load during the major part of flying—differing in this from normal motor car conditions.

"Builders of aeronautical engines are invited, and all facilities will be given to them, to demonstrate their engines by test at the R.A.F. Petrol, oil, and labour will be provided without cost, and the test bench appliances will be put at their disposal, subject only to the presence of a skilled mechanic to represent the firm putting forward their engine, and under the firm's responsibility for the test and any damage or accident which may occur in connection with the test.

"It is useful to secure that the weight shall not exceed 4 or 5 lbs. per brake h.p., and the brake h.p. in question is that h.p. which the engine will develop as useful h.p. on a 5 hours' test.

"It is as well that designers should realise that propellers of usual diameter run at from 900 to 1,200 r.p.m. according to the engine, and at normal full load, and that when a speed as low as 900 r.p.m. is given it is obtained by gearing down to the propeller shaft (naturally weight allowance is claimable for this.)

"One of a type of the engines now in use has in most cases (viz., one British and three foreign) been run from 20 to 24 hours without mechanical damage or overhaul and without compulsory stop.

"I can provide a wind-tunnel over the brake instrument, giving about 30 r.p.m. wind, or alternatively the engine may be submitted with a screw or fan such that it affords its own cooling.

"Where an air screw is used to develop the h.p. r.p.m., it will be necessary that it shall be handed over to be calibrated, and so obtain a measure of the power consumed by such screw. Fuel and oil consumption will be measured.

"Any further particulars will be given on request, and a statement of the performance, weight, h.p., speed, endurance, consumption, which is claimed is invited, whether or not the above desiderata are reached.

MERVYN O'GORMAN, Supt., R.A.F."

The suggestion is altogether excellent, for not only would engines so tested give the authorities a true measure of the comparative values of various engines, but the certificate of performance which is to be given on completion of the test should be a valuable asset to the manufacturer.

At the same time it might be well to ensure that the same engine is adequately tested independently, as even the best of scientific experts is liable to err on occasion. For instance, a certain engine of a normal 70-75 h.p. was tested recently at the R.A.F. with a Walker dynamometer, and was certified by the officials as averaging 54 horse-power. The proprietors of the engine not being satisfied with this test, then took the reading of the dynamometer to the Walker people themselves, who certified that with the blades at the smaller radius and with the engine doing 1,300 r.p.m. it was giving 65 h.p., and that with the blades at the larger radius it was giving 70 h.p. at 1,170 r.p.m., the radii in each case being those which were employed in the tests at the Royal Aircraft Factory. It seems fairly safe to estimate that the makers of the dynamometer, who have been in business for a number of years, know accurately the power required for their instruments, and in such a case one is disposed to accept their calculations.

An Outsider at the Aero-Show.

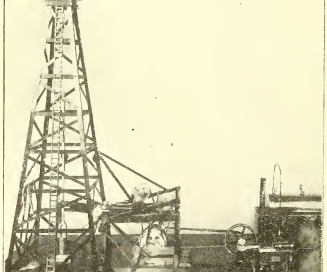
BY W. ARTHUR BARR.

I approach this exhibition from the viewpoint of a newcomer, of an ignoramus, enthusiastic if you will, but very raw. You must therefore pardon me the use, my patient peruser, of the despicable first person singular, in place of the didactic, omniscient "we" or the non-committal "one," for this is a personal and singular affair, bristling, probably, with error, for which I, and not The Aeroplane, must take responsibility.

I attended, in a spirit of more or less idle curiosity, the first and second Aero Exhibitions, and my memories of the two are distant and confused; the third I missed, and so, as there was no exhibition in 1912, three years have elapsed since I last doffed my hat to the concentrated genius of British aviation. What had three years done for the science? That was the first general question which disturbed me as I visited this fourth Aero Exhibition. The first answer that impressed itself upon me was a discouraging and negative sort of answer; one thing which three years had failed palpably to do was to popularise aviation among the British public. At the motor-cycle show I did not have to walk, I simply leaned up against my neighbours and was squeezed completely round the building and ejected "through the same door as in I went," having gleaned just about as much information as Omar did when investigating the wheels of God. At this Aero Show, Olympia was mine. I used to wonder what Robinson Crusoe felt like. Now I know. What will the attitude of this lethargic British public be on the Day of Judgment? Will the ultimate Gabriel horn stir them? I doubt it.

Why does not aviation appeal? Why does it not—to use the priceless Gallic phrase—"vulgarise itself"? The fact that the average citizen cannot afford to fly has little to do with the point; the French public is not wealthier, yet a queue of impatient visitors awaited the opening of the Salon doors in Paris. Probably it is lack of imagination.

The second answer was less depressing. A cynical, unimaginative Briton would say, after a cursory glance at the exhibits, that three years had sufficed to eliminate the freak. Four years ago one wandered from stall to stall and asked each exhibitor two questions, both of which are now out of date; one asked, firstly, what principle did the machine work upon; secondly, one asked, has the machine flown. To-day, strolling up the central gangway, one finds a row of monoplanes—a Handley Page, a Borel, two Deperdussins, a Blériot, a Nieuport. All, or their prototypes, have flown. A knowledgable man sees striking points of difference. I, my knowledge still to come, am impressed chiefly by their striking similarity. I do not like that phrase, "the elimination of the freak," for ten years ago every air-machine was a freak, and the science is still in its babyhood; I would say, rather, that design, for the time being, has become standardised: the developer has succeeded to the originator.



The Model of a Petroleum Derrick shown by the "Shell" Company.



The Aircraft Company's Stand at the Show.

And then, having arrived at this conclusion, one comes upon the stand of Mr. Robertson Porter and his Gyropachute surrounded by a group of Britons who at last have discovered an object upon which they may whet that English substitute for imagination—incredulity—something they can still disbelieve in for a while without making themselves ridiculous. Now, you know, that is not the atmosphere in which progress thrives. It is, in fact, the atmosphere which kills the prophets more surely than stoning even did. It may be true, for the present, that the Gyropachute will chute better than it will gyre, but, recollect, Wright, Farman, Cody, men of mountain-moving faith, backed by sound science, "believed" three several biplanes into the air despite the scoffers. One of these days I believe that an Ornithopter is going to ornithopt and a Helicopter is going to helix itself vertically. Mr. Porter, I am both British and ignorant; but I salute you, sir; I rank you now with Pilcher; may I live to rank you with Wright.

But of aeroplanes, another rude shock awaits me at the end of this aisle. I said that the period of origin had given way to the period of development. I turn to the right, and lo! there is the war-stained veteran of Cody—Cody of Laffan's Plain, of Salisbury, of the Michelin prizes; the plane which the builders refused, which has become the head of the corner—or words to that effect. The three years of development may be traced in other machines with little difficulty; in this machine development appears to consist of a replacement or two, sundry patches, and a handful of wire and tape, yet in the Military Competition of 1912 this biplane, identical, to all intents and purposes, with the original machine in which Cody first took

the wind, bore away the first prize! Of all the various interpretations which can be put upon this fact the most convincing seems to me to be a deduction that the Cody biplane is possessed of inherent development, very much as the Handley Page monoplane is endowed with inherent stability.

The Maurice Farman I recognised as easily as I did the Cody; development here seems to be merely a process of refinement culminating in that subtle touch of delicate humour—the spare wheel.

In the matter of engines progress is plainly visible. The Gnome—a revolutionary engine in two senses—whose service to aviation has been unique and invaluable, remains, as formerly, an example of flawless construction; but it holds the field unchallenged no longer, and the efficiency of its rivals is well attested, particularly by the arresting legends displayed upon the neighbouring Green engines, which have shared most of the Cody victories. Men there are who proclaim that the rotary principle is played out. It is customary to take these critics over to the stand upon which is displayed a brand new venture in the rotary line, made by Clerget; and in this connection a fact is borne in upon me more and more as I wander and listen—namely, that in matters of aviation the opinion of an expert as to what is played out and what is playing in and what is going to be played in is just about as valuable as my own most ignorant of all opinions.

The "Delta" attracts the largest crowds, for the obvious reason that it is the biggest thing. The cheerful sergeant in charge is as patient and indefatigable in explanation as he is enthusiastic and optimistic in his imperialism; but the fact remains that his pretty "Delta" could be exhibited inside a Zeppelin very nearly as conveniently as it is now exhibited inside Olympia. Whose fault is that? The Government's? The War Department's? Guess again, my friend. As I think of those lonely, sad-eyed spectators whom I met from time to time as I walked up and down the echoing hall, I fancy I know whose fault it is.

"Trust the People?" Then let all good patriotic orchestras learn to play the Dead March in Saul as soon as may be. No; trusting is not of any use; you have to feed this sort of people, chase them with aeroplanes and scare them with Zeppelins till they dare not sleep. Our hope is in Hendon and Brooklands and the daily Press—not in Olympia.

The Brooklands Aero-Club.

THE AEROPLANE is informed that on Friday of last week the first annual dinner took place of the Brooklands Aero Club, the body which has done so much by promoting starting, landing, and bomb-dropping competitions among its members at Brooklands to popularise aviation among the British public.

Mr. T. O. M. Sopwith is said to have occupied the chair, and it is understood that among those present were Major Lindsay Lloyd, Messrs. Mervyn O'Gorman, S. F. Cody, H. Perrin, G. Hamel, F. W. Merriam, H. Spencer, R. L. Charteris, G. F. and J. C. Mort, A. D. Lang, E. Pashley, H. Hawker, F. Sigrist, H. DelaCombe, A. E. Berriman, H. Massac Buist, and J. Owen.

It is reported that Mr. O'Gorman said that aeronautics in England was not in such a parlous state that the investing public should fight shy of it. It had a commercial side as well as a sporting side, and it asked for support, not charity.

Mr. S. F. Cody is alleged to have stated that the present aeroplanes were but mosquitos compared with the machines which would be built within ten years.

Major Lindsay Lloyd is said to have spoken of the improvements which had been made at Brooklands during the winter, and to have announced that Mr. Hamel had been engaged to fly at Brooklands every Sunday during the next two months.

The Doctoring of Monoplanes.

It is understood that several of the monoplanes belonging to the Royal Flying Corps and at present in charge of the Royal Aircraft Factory are now being stripped with the idea of strengthening them where the R.A.F. experts think strengthening to be necessary. It is possible that, in certain cases, improvements may be effected; but, in view of the fact that in the majority of the machines certain fittings are as they are because of practical experience gained by the constructors, it is always possible that what are intended to be improvements may actually become sources of danger, for the strengthening of one part in a properly designed piece of mechanism will frequently cause the breakage of another part. It may, therefore, be well to point out that, in the event of these "doctored" machines coming to grief, the makers thereof must be held entirely free from all responsibility.

Concerning "Scare-Ships."

One or other of the various "scare-ships" which have been visiting this country has been at work during the past week. Concerning the one seen over Selby, Yorkshire, further news has been received from Mr. Joseph Bentley, of Scarborough, who sends a copy of the "Scarborough Weekly Post" of Friday 21st, in which it was reported that an airship was distinctly seen over Oliver's Mount the previous night, and that so long ago as February 6th a similar phenomenon was seen. There is still a disposition to doubt the reality of these nocturnal visitors, but in Service circles they are generally accepted as a fact.

It is quite possible that these are not new machines coming direct from the Continent, but may all be one vessel of an older type acting in conjunction with a sea-going ship which, in the guise of a simple merchant vessel, meets it at sea and replenishes its store of gas, fuel, and provisions. Such experiments would be extremely useful and could be carried out without much trouble or expense.

Mr. Noël at S. Moritz.

On the 13th Mr. Noël had quite an unpleasant experience, for while flying over the edge of the valley at S. Moritz he was caught by a current and blown almost into the forest. It was only by banking the machine almost vertically that he was able to escape the trees, and even as it was, he actually carried away a branch on a wing-tip. Most of his flights have been at about 4,000 ft., and he has made trips down the valleys leading to and from S. Moritz. He and Mr. Carr have now got the engine running properly, in spite of the cold. Mr. Noël assures us that it is easier to fly at Hendon in a 40-mile-an-hour wind than over these snow-clad valleys in a 15-mile-an-hour wind, the currents between the mountains being terrible.

On the 19th he made a flight in the moonlight, about 7 p.m., and describes it as a most fascinating experience, though the moon shining on the snow made it difficult to land.

Mr. Noël tells a delightful story of a German who intruded into the shed and "butted in" when Mr. Noël was talking to some friends. After talking for about a quarter of an hour about the beauty of German aeroplanes and his "great friend" Count Zeppelin, the German said: "Will you tell me" (pointing to the wheels) "if they are the propellers of your aeroplane?" Mr. Noël was speechless for some seconds, and then said: "Oh yes; I borrowed them from Count Zeppelin!" Carr, who was sitting on a case, fell off it on to the floor in an agony of mirth, and when the rest of those in the shed recovered sufficiently to take notice, the German had disappeared.

The Hendon Programme for 1913.

The Grahame-White Aviation Co. have issued a definite programme of their fixtures for 1913, and also announce that season tickets for the London Aerodrome are now on sale. The price of the season ticket admitting to the paddock enclosure on all days when the aerodrome is open to the public is £2 2s. for gentlemen and £1 11s. 6d. for ladies. There is also a special season ticket at a guinea for children under thirteen, and for £2 2s. a season pass is issued for a motor car or carriage, including driver in livery.

Race meetings have been arranged practically for every week-end in the year, the first big meeting being on Good Friday, Saturday and Monday of Easter, March 21st, 22nd and 24th, and, of course, there will be the usual exhibition flights on Easter Sunday, the 23rd. Another big meeting is on May 10th, 11th, 12th, when the great event will be the cross-country race for the Giesler Trophy, and on May 24th there will be a special Empire Day meeting.

On June 7th, the second "Aerial Derby" will be held for the "Daily Mail" Trophy. On July 5th there is to be a

special Ladies' Day, and on September 27th there is a Naval and Military meeting. The last date booked is November 5th, when there will be illuminated night flying and fireworks.

It is, however, well to remember that one can see good racing any Saturday, and that exhibition flying on Thursdays and Sundays is always worth seeing. Neat little pamphlets are issued, giving the dates, and all those interested in flying are invited to send for them to the Grahame-White Aviation Co., Ltd., Hendon, or 166, Piccadilly.

Concerning Official Loading Tests.

One gathers that the official loading test of certain of the Maurice Farman machines delivered to the Royal Flying Corps has been carried out at the Farman works at Hendon. This is quite as it should be, but it prompts one to ask why the same courtesy could not have been shown to the makers of certain monoplanes to which reference has already been made in this paper, the more so, as the Farmans have in any case to be delivered to Farnborough, whereas the monoplanes after test have to be brought back to London for shipment.

Propellers in Piccadilly.

Mr. A. Dashwood Lang has now started in business as a propeller maker with offices at 166, Piccadilly. He is prepared to make propellers to any design, or to design propellers for any purpose, and he is also making models of planes or of complete aeroplanes for laboratory test purposes. Mr. Lang's reputation as chief of the Propeller Department of the British and Colonial Aeroplane Co., Ltd., is already high, and one is happy to state that in leaving the direct employ of the firm he still retains not only the personal friendship of his late chiefs, but a goodly share of their business.

Intégral.

M. Chauvière announces a welcome piece of news. The manufacture, on a large scale, of Intégral propellers in England is to be commenced almost immediately. Hitherto only a few special Intégral propellers have been built in this country, but when the new workshops are in working order the entire British demand will be supplied from the English factory. The winner of last Saturday's Aero Show trophy, M. "Vitry" (Bréguet) used an Intégral propeller, as did the second man, M. Verrier (Maurice Farman).

A New School at Hendon.

It will be remembered that a week or so ago attention was drawn to the excellent flying of Mr. G. L. Temple, although he had not at that date taken his certificate. On Monday of last week Mr. Temple went through his brevet tests on his 35-h.p. Caudron in excellent style, doing his height test with plenty to spare, and each time landing dead on the mark. The interesting point about Mr. Temple's flying is that he is entirely self-taught, having done his preliminary training on his own 45-h.p. Anzani-Blériot, and passing his test on a 35-h.p. Caudron. He has recently been forming a school at Hendon, and now that he is a qualified aviator the school will get to work regularly. Besides being a pilot, Mr. Temple is a qualified engineer, and a graduate of the Institute of Mechanical Engineers.

The Aeronautical Society.

Elections:—Lieut. Col. C. F. Massy and Lieut. T. H. S. Montefiore, R.H.A., Assoc. Members; Ralph Richardson, student.

Meetings:—A discussion, by general request, will take place on Wednesday, March 5th, at the R.U.S.I., on the subject of "Stability."

The eighth meeting will be held on Wednesday, March 12th, at 8.30 p.m., when Mr. A. P. Thurston, B.Sc., will read a paper on "Some Research."

The Finding of Mr. MacDonald.

The body of the late Mr. MacDonald, who was drowned in the Thames on January 12th, was recovered at Gravesend on February 19th.

New Petrol Prices.

In order to meet the enormous demand, the proprietors of "Shell" motor spirit have decided to introduce a new grade of petrol, which will be known as "Shell II." This will be packed in cans, the top half of which will be painted the familiar red colour, and the lower half French grey. "Shell II" has been on sale since Monday, February 24th. "Shell" Spirit will now sell at 1s. 9d. per gallon and "Shell II" will cost 1s. 7d. per gallon.



The handsome and striking Cellon stand at the Aero Show.

The Week's Work.

MONDAY, February 17th.

R.F.C., Central Flying School.—Fine, clear, freshening, northerly wind, blowing gale from 10.30 a.m. On Avro 404, Captain Fulton, R.F.A., 10 mins., Lieut. Small 10 mins., Lieut. Littleton 10 mins. On Maurice Farman 411, Lieut. Longmore with Sergt. Street 17 mins. On Maurice Farman 403, Air Mechanic Collis 15 mins. On Maurice Farman 425, Lieut. Harvey 21 mins. On B.E. 417, Lieut. Arthur 7 mins., Capt. Salmond 5 mins. Major Gerrard arrived from Farnborough on new Short tractor 424 in gale, landed well, but in taxi-ing towards sheds a big wind caught machine and turned it over, slightly damaging machine. Lieut. Conran arrived from Farnborough on new Maurice Farman 427 and Major Trenchard arrived, also from Farnborough, on new Maurice Farman 426, after having been brought down at Whitchurch through broken petrol pipe.

R.F.C., Farnborough.—Strong, southerly wind in gusts 25 to 30 miles, very bumpy. On Bréguet No. 213, Major Raleigh two circuits 150 ft. Later Captain Longcroft left for north in B.E. 218 and landed near Oxford with propeller damaged. Lieutenant Waldron also left on Maurice Farman for north. Major Gerrard, R.M.L.I., made circuit at good height on Short tractor, and then flew to Upavon. Lieut. Conran and Major Trenchard also left for Upavon on Maurice Farman.

Brooklands.—At Vickers School, new pupil taxi-ing No. 3 mono, doing very well for first attempt.

TUESDAY, February 18th.

R.F.C., Central Flying School.—Very sharp frost, clear. Ground covered with snow. Very strong N.E. wind, bitter cold. No flying.

Hendon.—On Bréguet, M. Richet out in high wind, and had difficulty in confining flight to neighbourhood of Aerodrome.

WEDNESDAY, February 19th.

R.F.C., Central Flying School.—Very sharp frost, clear. Very strong N.E. wind. On Short biplane 401, Major Gerrard 7 mins. flight, getting a lot of bumping about.

Salisbury Plain.—Bristol School, M. Jullerot up in 50-h.p. tandem mono.



Mr. George Lee Temple, proprietor of the Temple Aviation School, who recently took his pilot's certificate at Hendon on a Caudron biplane.



Lieutenant C. E. Lee, the King's Royal Rifle Corps, who took his pilot's certificate on a Bristol biplane at Brooklands.

R.F.C., Farnborough.—Strong southerly wind. M. Verrier arrived with passenger on Maurice Farman.

Hendon.—At Aircraft Co., M. Verrier out on Maurice Farman, although wind as bad as previous day.

THURSDAY, February 20th.

R.F.C., Central Flying School.—Very sharp frost, clear. Very strong N.E. wind. No flying.

Salisbury Plain (Bristol School).—No flying till 5 p.m. Mr. England testing 80 h.p. mono., reaching 2,000 ft., and landing with good spiral. Mr. Jullerot on 50 h.p. "Bristol," Mr. Pixton on 80-h.p. mono.

FRIDAY, February 21st.

R.F.C., Central Flying School.—Sharp frost, clear, strong wind forenoon, dropping to dead calm during afternoon. On Avro 404, Major Fulton, R.F.A., 10 mins. (twice), Lieut. Marks 10 mins., Lieut. Small 10 mins., Littleton 10 mins. On Avro 406, Lieut. Holt 10 mins. (twice), Lieut. Small 10 mins., Lieut. Littleton 10 mins., Lieut. Warter 10 mins., Lieut. Marks 8 mins. On Maurice Farman 403, Lieut. Longmore 7 mins. On Maurice Farmaa 425, Capt. Salmond 5 mins., Lieut. Boyle 16 mins., Lieut. Marix 22 mins., Lieut. Harvey 19 mins. On Maurice Farman 418, Capt. Tucker 10 mins., Lieut. Glanville 15 mins., Lieut. Bowhill 15 mins. On Short 401, Lieut. Oliver 20 and 9 mins. On Short 402, Lieut. Roupell 40 mins. On B.E. 417, Capt Salmond 7 mins., Lieut. Soames 20 mins., Lieut. Bigsworth 11 mins., Capt. Salmond with Lieut. Dawes 11 mins. Major Ashmore arrived on new Maurice Farman 420 from Farnborough. This machine is fitted with two headlights, and has mica windows let in the front of the body.

R.F.C., Farnborough.—Wind bumpy. Major Ashmore left for Salisbury on Maurice Farman after two or three circuits.

Hendon.—At W. H. Ewen School, Mr. Gordon-Bell gave fine exhibition on 60-h.p. Caudron in strong wind.

Brooklands.—At Bristol School, Mr. Merriam and Mr. Blatherwick up at midnight in moonlight, judging descent by cycle lamps on ground.

Salisbury Plain (Bristol School).—About 5 p.m. Mr. Pixton tested two 80-h.p. monos with passengers. M. Jullerot up on 50-h.p mono.

SATURDAY, February 22nd.

R.F.C., Central Flying School.—Very misty early, clearing about 9.30. Freshening N.E. wind. On Avro 404, Major Fulton 10 mins. alone, with Air Mechanic 15 mins.; Lieut. Warter 10 mins.; Lieut. Small 20 and 15 mins.; Lieut. Littleton 20 and 15 mins.; Lieut. Holt 15 mins.; Lieut. Marks 15 mins. On Avro 406, Air Mechanic Higginbottom giving instruction to Ldg. Seaman Marchant 30 and 10 mins., with an Air Mechanic 10 mins. (twice); Lieut. Marks 10 mins.; Lieut. Warter 10 mins.; Lieut. Holt 10 mins. On Maurice Farman 411, Lieut. Longmore with Air Mechanic McNamara 18 mins., with Ldg. Seaman Bateman 15 mins., with Sergt. Street 22 mins. On Maurice Farman 403, Air Mechanic Collis 14 mins. On Maurice Farman 425, Capt. Salmond 5 and 8 mins.; Lieut. Boyle 8 and 13 mins.; Lieut. Conran 7 and 13 mins.; Lieut. Marix 11 and 12 mins.; Lieut. Ross 11 mins.; Lieut. Kennedy 7 mins.; Lieut. Harvey 7 mins. On Maurice Farman 418, Lieut. Unwin 8 mins.; Capt. Tucker 20 mins. On B.E. 416, Capt. Salmond with Lieut. Macdonnell 30 mins. and 5 mins. alone. On B.E. 417, Lieut Burroughs 20 mins.; Lieut. Arthur 15 and 17 mins. at 5,000 ft. Lieut. Soames 21 mins.; Lieut. Bigsworth 8 mins. On Short 401, Lieut. Oliver 13 and 26 mins. On Short 402, Lieut. Roupell 5, 10 and 25 mins. Major Gerrard arrived on new Short tractor 423 from Farnborough.

R.F.C., Farnborough.—Weather calm. Mr. Brock on Deperdussin mono, doing circuits for 20 mins. at good height.

Hendon.—At Graham-White School, Mr. Birchenough (new pupil) rolling on school bus No. 7 with Instructor Manton. Later alone, Mr. Manton testing brevet machine.

At W. H. Ewen School, pupils out under Mr. Lewis Turner. Lieuts. Bayly and McMullen straights and circuits on 35 Caudron. Mr. Turner on 60 Caudron with Messrs. Lawford, Stewart, Prosser, Gist, and Lieut. Bayly. Mr. Gordon Bell on same, flying well.

At Deperdussin School, Mr. Spratt testing on No. 4, then Lieut. Hawker two circuits and figures of eight, after which he took his brevet in good style, reaching 250 ft. Later Mr. Whitehouse flew circuits on same machine. In afternoon Messrs. Whitehouse and Spratt gave exhibition flights.

At Blackburn School, Mr. H. Blackburn after racing gave exhibition flight.

Race for Aero Show Trophy a great success. (See special report.)

Brooklands.—At Vickers School, Mr. Barnwell on No. 5 mono. for an hour in afternoon.

At Bristol School, Mr. B. Bendall testing. Mr. Archer took second half of ticket in choppy wind. Mr. Merriam up alone, then with Mr. Dunbar (prospective pupil), and with Lieut. Warlow, who is joining school.

SUNDAY, February 23rd.

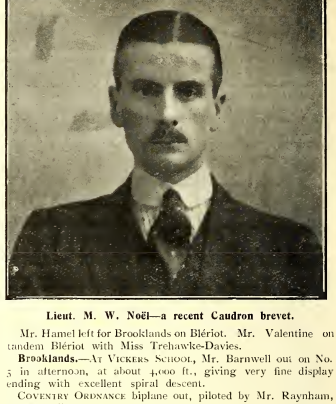
Hendon.—At W. H. Ewen School, Mr. Lewis Turner on 35-h.p. Caudron, Lieuts. Bayly and McMullen straights and circuits; Mr. Lawford also out; Lieut. Usborne, R.N., new pupil, doing first straights on same. Lieut. Spencer Grey splendid exhibition of 30 minutes on 35-h.p. Caudron. Mr. Turner also up.

At Blackburn School.—Mr. H. Blackburn gave two exhibitions of 15 minutes each.

At Graham-White School.—Messrs. Manton, Desoutter, and Gates all giving fine exhibitions.

Mr. Frank McLean with Lieut. Gregory, R.N., arrived from Eastchurch on Short biplane, having navigated without map or compass.

M. Richet out on Bréguet, and M. Verrier on Maurice Farman.



Lieut. M. W. Noël—a recent Caudron brevet.

Mr. Hamel left for Brooklands on Blériot. Mr. Valentine on tandem Blériot with Miss Trehawke-Davies.

Brooklands.—At Vickers School, Mr. Barnwell out on No. 5 in afternoon, at about 4,000 ft., giving very fine display ending with excellent spiral descent.

Coventry Ordnance biplane out, piloted by Mr. Raynham, flying well.

At Bristol School.—Mr. Merriam for several exhibition circuits in strong wind; later with Lieut. Blatherwick for instruction. Mr. Bendall flying alone and with pupils. Mr. Merriam then with Lieut. Robertson-Dobie for circuits.

Mr. Hamel arrived from Hendon on Blériot at 6,000 ft. and later gave Brooklands an exhibition of aerial acrobatics, to which he has accustomed Hendon crowds during past summer.

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The Trials for Classes 1-2a and 2b will take place at the London Aerodrome, Hendon, on Saturday, March 1st, commencing at 9 a.m. sharp.

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"Model Engineer" Exhibition.

The "Model Engineer" Exhibition will be held at the Royal Horticultural Hall, Westminster, October 10th to October 18th, inclusive.

The aeronautical section will be organised by the Association, and the full details will appear in due course.

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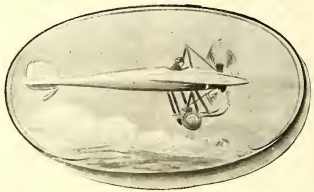
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1d WEEKLY

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VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, MARCH 6, 1913. No. 10.

A WINTER PARADISE



A photograph of S. Moritz taken from Mr. Noel's 70-h.p. Farman, a wing of which shows on the left. The shed which housed the machine is marked by Mr. Noel.



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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London.

Concerning £1,000,000.

There *is* balm in Gilead; good *can* come out of Nazareth; and Dover cliffs are *still* white. After months of steady spade work by a few of those connected with aviation, the daily Press has at last waked up and is demanding, with quite surprising unanimity, that at least £1,000,000 shall be spent on military aeronautics this year. True, some papers are somewhat vague, and seem to think that all will be well if the sum named is produced by the Admiralty and War Office together, regardless of the fact that the Naval Estimates have a quaint way of not specifying very definitely for what particular object money is required, and forgetting that the Navy buys many things not mentioned in the Estimates with money appropriated from other departments. For example, it would be hard to find in the current year's estimates any sum capable of covering the new Flying Corps' quarters and sheds at Eastchurch, the fifty or sixty aeroplanes bought during the year, and the two dirigibles on order.

Furthermore, some of the more technical journalists who have from time to time written as if they were official apologists for the War Office and Royal Aircraft Factory, have fallen into line with the rest of us, even to the extent of approving enthusiastically of the lengthy and comprehensive exposure of official incompetence published by Mr. Joynson-Hicks, M.P., in the "Standard" on February 13th, an article which summarises for popular consumption the various points which have been discussed rather more technically in these pages during the past year.

The "Scareships."

Apparently the prime cause of all this newspaper agitation has been the advent of certain strange aerial visitors during the past few months, beginning with the dirigible heard at Sheerness in October last, and first brought to public notice by The Aeroplane. Undoubtedly some of the roving lights seen at night have been those of fire balloons sent up either by practical jokers or by people who seriously intended to wake up the obtuse English. I know of two or three such machines that have been sent up; one of them, I am told, had a capacity of a thousand cubic feet, and was shaped sufficiently like a non-rigid dirigible to be mistaken for one at some little height.

Naturally, on the strength of this, some papers choose to believe that all the machines reported as being seen have been of the same breed, but I gather that such papers are not altogether uninfluenced by the fear that a big vote for military aeronautics may upset some of the schemes for social reform evolved for the coming year by the Chancellor of the Exchequer. These people are apt to forget that there is no use in reforming our social state if our defence forces are so inadequate as to make it easy for any hostile nation to walk in and deform the whole social structure. Per contra, some of the "war at any price" papers forget equally that immense armaments are quite useless if one has only degenerate weeds to man them. We must have both personnel and matériel, and as both are necessary for the defence of property, the property owner—whether he be a shopkeeper or a landed proprietor—must pay. The trade of the country is increasing by millions per annum, and the traders who benefit cannot grumble if they are taxed up to even half their increased profits as an insurance on the other half.

The working classes have little to lose. If this country were conquered by another they would still have to work, they would only suffer a change of masters—not necessarily a change for the worse. It is the English merchant who would suffer most, and he is the man who pays least towards either armament or social reform to-day.

But to return to our ships. The naval officers and others who heard, and in some cases saw, one or other of the machines which passed over Sheerness are scarcely likely to have been mistaken, and in any case there is too much corroborative evidence in other directions which cannot, at the moment, be disclosed. It is, however, commonly accepted in certain quarters that one of the dirigibles which came over here was the Zeppelin "Hansa," and that she had been hired for the trip by Prince Pless, formerly well known in English society as Prince Henry of Pless, who married Miss Cornwallis-West, sister of the Duchess of Westminster. It is said that he was accompanied by ten guests, "all of whose names are known" in the proper quarters. Also it is said that he intended to pay a visit in this ship to a certain English peer, but was prevented by bad weather from attempting a landing, and so went straight back. If this story is true, as it is believed to be by many who are in a position to know, it was certainly a sporting effort on the part of Prince Pless, and he deserves every credit for it.

As regards the other ships of reasonable authenticity, such as the one seen at Cardiff, I see no very good reason to doubt their existence, and if anyone is anxious to find out what some of them were he might spend his time searching the Continent till he finds an empty dirigible shed which is nominally full, and then extend his search till he finds in the Navy list of one of the great Powers the name of a warship whose present whereabouts cannot be located.

In these days of nose-cups and mooring masts it should not be very difficult for a dirigible manned by an experienced crew to operate in conjunction with a warship, tying up to her in some unfrequented part of the ocean when it is necessary to replenish supplies of gas, fuel, and provisions. It would be excellent practice for the crews of both ships, and, in the event of the airship making some of her trips over this country, it would have the desirable effect of awaking some people to a sense of what might happen in war time.

There are also certain other possibilities, on which the recent visit of a British Cabinet Minister to a Continental capital may have some bearing.

One thing at any rate is certain, namely, that when—if ever—it is thought well to make public the truth about all these mysterious airships the people of this country will be considerably surprised, and will

realise not only our present defenceless state, but also the benefit of strong fleets both at sea and in the air, no matter what the cost may be. In any case, the "scareships" have done good work in rousing the majority of the Press to a sense of its responsibility, and the demand for the million pounds which, I gather, is quite likely to be satisfied, may be placed to their credit.

Round Figures.

In a way it is a pity to ask for a million. As a newspaper headline, or as an election cry like "We want eight and we won't wait," the round sum is handier, as being more likely to stick in the memory.

A frivolous friend suggests that the papers should inflict on their readers the couplet,

"We want a million,
Any sum less is a silly 'un."

And quite possibly at an election time that, or worse, might become a battle-cry. At any rate it would be no more banal than when the great convention of the Roosevelt party in the United States received Mr. Roosevelt with the chorus of "Oh! you beautiful doll!"

But this is a serious matter, and the financial scientists of the Treasury might be more impressed if we asked for £997,500, which would convey the idea that those who demanded the money had worked out exactly how it as to be expended, whereas the round million looks too much as if one merely wanted a lot of money and did not know just how much—which is probably somewhere near the truth so far as most papers are concerned.

In his usual place in this paper Mr. Whittaker has dealt with the possible expenditure of about £1,000,000 with his usual moderation in statement and statistics, and I commend a study of his views to anyone interested, as all personally concerned with aviation must be, in the Army Estimates. On the whole I am in agreement with him, and though personally most of us would like to see all his figures doubled, it is not hard to realise that only a very strong political head at the War Office, with soldiers and civilians who thoroughly believed in him to do the detail work, could pull so big a scheme through.

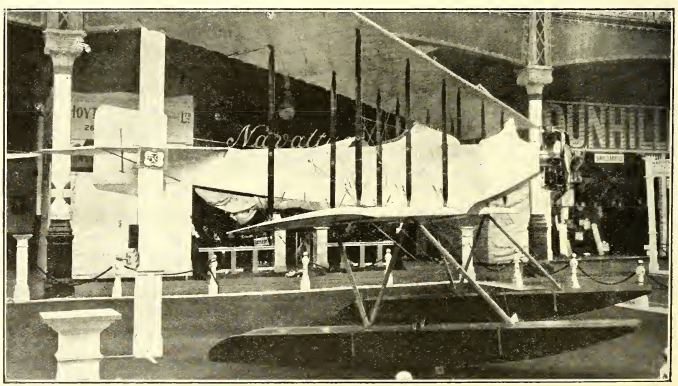
If we are granted our million we can do a good deal with it, provided certain reforms in its administration are carried out; but even if every penny could be spent to the best advantage, we should still be a long way behind France and Germany.

The Reform of the Royal Aircraft Factory.

Under the present system we are far from spending our money to the best advantage, because, unfortunately, the Military Wing of the Royal Flying Corps has allowed itself to be brought under the thumb of what is probably the most scandalously mismanaged civilian department that has ever existed—namely, the Royal Aircraft Factory. In this matter I particularly wish to point out that I am absolutely free from personal bias. I know one member of the staff personally, but he joined only a few weeks ago. I believe I have spoken to one or two of the present employees, but merely as members of a group conversing casually. For Mr. O'Gorman, the superintendent, I have much respect, as one of the cleverest men it has been my lot to meet; but, so far as I can gather, his actual duties at Farnborough has, until recently, only demanded his presence there on two or three days a week, so that he cannot be in touch with all the scandals afflicting a department paying so many hands, and under the control of so many underlings, and these notes may, I hope, draw his attention to matters which must have been hidden from him.

Ostensibly, the R.A.F. exists for the carrying out of full-scale experiments with aeroplanes, as an elaboration of experiments made with models at the National Physical Laboratory. In practice it controls the Military Wing of the Royal Flying Corps, because every aeroplane bought by the Military Wing has to be approved in design and passed as sound by the civilian "experts" at the R.A.F., and apparently the purchasing department at the War Office is afraid to buy anything without the approval of the R.A.F. This system, as may be seen, amounts simply to the fact that the Military Wing cannot have aeroplanes except by leave of the R.A.F. staff.

Now, obviously this same system opens the way to all the abuses of the "dockyard" system against which the Navy League has fought so strenuously and suc-



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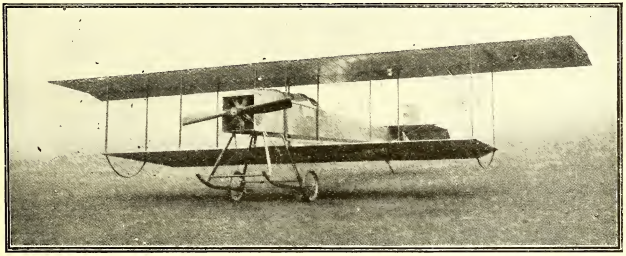
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cessfully in the past. It is to the advantage of the dockyard people to condemn everything done by independent constructors, so that all work may be done in the dockyard, and so provide higher positions and salaries for themselves, their relations, and their friends, as the amount of work grows and calls for bigger establishments. Writing as an unfortunate taxpayer, I am altogether in favour of a certain amount of dockyard work, as a check on the possible rapacity of independent constructors, who would certainly raise their price if unopposed. Equally I am opposed to any dockyard having a monopoly of work so that it becomes a happy hunting ground for highly-paid officials. Apart from that, anyone who knows anything of R.A.F. methods and those of the average aeroplane maker, can see at once that on the score of efficiency and economy combined the latter are immeasurably superior.

With all the money at its disposal the R.A.F. has turned out only one single type of machine that has done well, but several private constructors have built machines which have proved considerably more efficient.

Waste.

On the other hand, the waste at the R.A.F. is positively appalling. There are something over two hundred men in the aeroplane section alone. No one has yet discovered why, except on the theory that men and material are being prepared to turn out aeroplanes in quantities, when the officials have succeeded in "breaking" the industry, and in securing all the orders for the "dockyard." The great majority of these men spend the day simply killing time, and I am told by good class mechanics who have left the place in disgust that at any time thirty or forty of them may be found hanging about the lavatories smoking and gambling.

Any constructor can tell of numerous workmen of the best class, specialists in their way, who have left the R.A.F. after weeks of idleness and sought employment even from the impoverished aeroplane industry rather than forget their craft.

As a pretence of keeping men employed they are put on to machine work which is ultimately scrapped, needless things are made apparently simply to see what they will look like. This, of course, is true experimental work, but there is quite an amount of unnecessary stuff turned out, and I am informed that quantities of good steel, brass, and copper work has been taken out and buried to avoid enquiries that might follow if it were sold as scrap metal.

The machine shop is big enough to turn out two or three sets of engines a week, and is equipped with excellent machinery, so that when British makers of aero-engines have been convinced that they are not to get Government orders, all is ready to make engines at the Factory. I am told that engines are already being made there—as experiments, of course.

At present, the chief regular work of this shop seems to consist in repairing the old de Havilland engines of the "Gamma." There are apparently three sets, two in the balloon and one under repair, and the changes are rung on these, the repaired engine replacing a breakdown after every few hours in the air. On actual performance it appears that these engines could not take the "Gamma" to any one of the various hydrogen depots which have been so carefully arranged round the East Coast.

The mention of hydrogen stores suggests that it would be interesting to know why the supply of hydrogen sent to Crewe before the manœuvres last autumn was allowed to lie about for months in the L. and N.W. Railway yard, and whether it is still there or not.

The general control of the Factory is so slack as to be a public disgrace. Despite the fact that those most concerned with the work done there, namely, the officers of the Royal Flying Corps, are not allowed inside without a special permit, and then only under escort of a civilian official, anyone wearing a suit of overalls can go practically where he likes and learn as much as he cares to look for or ask, let alone being able to help himself to tools or fittings.

At night the place is left absolutely unguarded, but for a couple of firemen, who are said to find the boiler-house much more comfortable than draughty aeroplane sheds. Anyone could get over the little iron fence and do irreparable damage if there was anything worth damaging except a few aeroplanes belonging to the unfortunate Flying Corps.

The Army's Monoplanes.

Damage to aeroplanes reminds me that, thanks to the attentions of the Factory staff, ten at least of the monoplanes which were, according to Colonel Seely, in flying order last January, are now definitely unusable. These have been piled higgledy-piggledy into canvas tents, by courtesy called "portable hangars." A few days ago there were in No. 36—the green canvas tent—two Deperdussin monoplanes, and three of Flanders make. In No. 26—the khaki tent—were another Flanders, a Martin-Handasyde, and three Deperdussins. All told, these represent about £10,000 worth of the taxpayers' money.

The tents are not weather-proof and the machines are being damaged by wet and sand. The wings have been taken off by unskilled labourers, and the fabric has been roughly stripped from many or all of them. In a number of them the ribs have been wantonly broken. In short, the way these machines have been handled suggests the methods of the marine-store rather than even the most primitive form of factory organisation. Practically every machine will have to be rebuilt by the makers.

The methods of the Factory officials are shown by the fact that prior to treating the machines in this way the Factory has required the makers to give a definite price for making certain definite alterations, for which the makers have in some cases already quoted on the assumption that the machines are in good order, and merely require, perhaps, an extra wire or two, or extra fastenings to the fabric.

Almost all these machines were, when delivered, fit for any ordinary man to fly, and the officers of the Royal Flying Corps were willing and anxious to fly them, till Colonel Seely was seized with panic and prohibited their doing so. Now the civilians at the Factory insult the Service by saying at large that the "alterations" are to be made because the military pilots are afraid to fly the machines.

The true state of affairs at Farnborough is that since the five machines which flew best have gone to Montrose there are not five other machines for the pilots now at headquarters to fly. At any rate, there were not as many a week ago, though perhaps the Factory may have permitted the Flying Corps to take over one or two others since then.

The Treatment of Constructors.

Here is the experience of one aeroplane firm in dealing with the Factory officials. A machine was sent down for inspection, and passed its flying tests with ease in weather which kept even so fine a pilot as Mr. de Havilland on the ground. At the request of the officials the machine was left there for a fortnight or so. The firm then enquired as to the official intentions, and were told that the Factory had strongly recommended the War Office to purchase the machine, and one of the high officials advised the head of the firm to call next day on a certain officer at the War Office. This the head of the firm did. He was, of course, courteously received, and was told that this officer had never heard the name of the machine, of the firm, or of the head of the firm. But, he was informed, the Flying Corps needed aeroplanes badly, and if the machine was passed by the Factory it would

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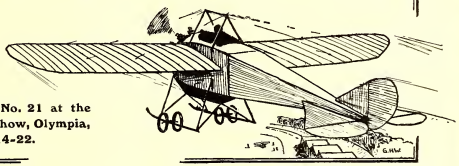
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be bought at once. The only test remaining was the sand-loading test—a test which is much more likely to do harm than good. The firm advised the Factory that they were ready to submit the machine to this test at once, but no test was made. After a further delay of some weeks the firm received a curt note from the Factory—not from the War Office—saying that the machine was not required. No explanation of any kind was given. The machine is a good one and is largely used in the French Army, so presumably it would be good enough for our service, having already proved its ability to fly.

This is strangely like the case of a certain engine, whose chief was told by a Factory official that a strong recommendation had been sent to the War Office that an engine of this make should be bought. Yet this same official was unwise enough, only a few days after making that statement, to condemn the engine vehemently in the presence of a friend of the firm. After that one can form some estimate of the value of a "recommendation to purchase" from the Factory.

Transport.

Apparently the Factory even has its finger in the purchase of motor vehicles for the R.F.C. transport. I gather that a number of high-powered cars, some with limousine bodies, have been purchased. These cars are of a pattern not now produced, and may fairly be described as obsolete. I do not know whether they are being bought direct from the makers or not, but I gather that the price paid is fairly high, and I know that second-hand cars of similar type in good condition can be bought at £100 or even less. One would have imagined that for such a purpose specially designed transport cars of the most modern and economical type would have been purchased, or, if something cheap was wanted, that second-hand cars would have been acquired. One would like to know the price which is being paid for these cars, and how the Factory officials come into the deal.

The Finance of the Factory.

It would be well if some influential person would insist on knowing how much money the R.A.F. has been allowed to control during the current financial year, and what it has to show for it. Naturally one does not expect it to produce aeroplanes. Mr. O'Gorman has often stated that it is not its job to do so. But one does expect some report of the knowledge gained, for the benefit of British aeroplane constructors, and one would be justified in expecting some account of the repair work done to R.F.C. machines. So far all the visible results are certain "B.E." type biplanes, which have been proved less efficient for their power than machines of similar type built by independent makers.

If any definite knowledge has been gained it has certainly not been imparted to British makers, though probably our French and German friends know all about it, much as the National Physieal Laboratory exhibits itself at Ghent, but publishes its results at home a year after its experiments have become obsolete. Anyhow, it does not seem likely that the R.A.F. scientists know much more than do the best outside makers, or presumably their "war-plane" would have flown by this time.

A Confession of Weakness.

Every here and there throughout the Factory one finds notices stuck up to the effect that the "Official Secrets Act" has been posted in the R.A.F., that "certain information has reached the press," that any such disclosures makes the person responsible liable to imprisonment with hard labour, and to "arrest and imprisonment till trial," and that persons inviting others to make disclosures are liable to the same penalties. If ever there was a confession of weakness this is one. No secrets have ever been divulged to the Press which were worth anything to anybody, and the Press has been kept fairly well informed by officials when any product of the Factory has done anything as good as the better-class privately-built machines have done. But the Official Secrets Act was never intended to act as a cloak for official rascality or incompetence. The allusion to "arrest and imprisonment till trial" appears to be simply an attempt to intimidate honest men into refraining from speaking their minds. The state of affairs at the Factory can only be due to rogues or fools. It matters little which. In either case reformatiou is needed.

The Reform Required.

What is needed is a complete alteration in the Royal Aircraft Factory. The purchase, inspection, and repair of military aeroplanes should be entirely in the hands of the Army, without civilian interference. I know of half a dozen officers who would do it at half the cost of time and money, and many times more pleasantly for the makers, than these civilians do. At least one would be assured of simple routine and courtesy from a soldier. Not the least of makers' worries at present is the behaviour of the understrappers at the R.A.F., who think it clever, on the strength of being dressed in a little brief authority, to behave superciliously to men who are distinctly their social and mental superiors.

By all means let the R.A.F. exist for full-size experiments, with a fixed sum per annum as a limit to its expenditure, but when results are obtained let those who find them submit them to the technical officers of the Flying Corps, ordering themselves lowly and reverently before their betters, as we were taught in our youth.

Also let us adopt the French system which decrees that all big repairs to machines shall be carried out by the makers of such machines, and that after a certain number of hours in the air each machine shall be sent to its maker for a general overhaul. That will stop such things as the breaking up of a £1,200 French machine into "spare parts" after an accident, instead of sending it to the makers to be rebuilt, as it could easily have been.

And, lastly, let it be decided definitely that the R.A.F. shall have nothing whatever to do with the selection of aeroplanes or transport vehicles for the Army. The soldiers are considerably better able to manage their own affairs than any civilian is able to do it for them, and when one is dealing with soldiers one is at least assured of honest treatment.

These little matters having been cleared up, we can then proceed with a cheerful mind to the spending of the £1,000,000 which we hope to have granted before the end of this month.—C.G.G.

The Late Wilhelm Kress.

Austria's veteran pioneer, Wilhelm Kress, frequently mentioned in these columns, passed away in the last week of Ferbuary, an old and embittered man, who, after bearing the stigma of "half crazy" for many years, witnessed a recognition of his aims when it was almost too late to do him any good. The last year or two of his life was rendered free from financial stress by grants made to him, but on the whole his entire existence was one great uphill struggle.

Born in 1836, Kress built a model kite in 1864 and a model plane capable of flying in 1877. Three years later he held a series of lectures at Vienna on aviation and illustrated them by a number of models that flew about the hall. His aim, however, was centred on a man-carrying machine, but as he was without the necessary means he had to wait until 1898 before he was able to approach his end. Owing to the extremely heavy motor, a Daimler of 30-40 h.p., his apparatus could not raise itself up into the air and was finally destroyed. Lack of money again crippled him, and he had to stand aside and watch others achieve what was impossible to him.—B.

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The Army Estimates and Aviation Requirements.

BY W. E. de B. WHITTAKER.

By this time it is probable that the Army Estimates for the year 1913-14 are practically ready for presentation to the House of Commons. The colossal mass of detail concerned in a year's expenditure in a great Government department has been reduced to the comfortable safety of large indefinite figures. A Minister of State will expound its provisions to the country's representatives, and with an air of candour will ask for criticisms that suitable alterations may be made.

Yet no change of the slightest importance would be permitted. The labour of preparation and the pride of the official author as well as the accepted policy of Government prevents any essential modification of the terms of estimates. Compulsion born of an adverse majority means the resignation of the Cabinet. Therefore, if it is desired with good reason that some vote known to be insufficient should be increased to an adequate sum, pressure should be brought to bear on the Minister of State before the production of the Estimates. It is possible that so far as the Army Estimates are concerned there is yet time for alteration.

The vote in question is that dedicated to the aeronautical services. The grant for these has been absurdly small in the past, and there is no reason to assume that any great increase is to be expected this year. A Cabinet Minister may have the best intentions in the world, but unless he has the strength of character sufficient to support and carry through his ideas he will inevitably fall before the influence of the Treasury. It may be essential to spend two millions on aviation this year. The Treasury may regretfully admit it, but it will be pointed out that there is no money, and that another statesman requires six millions with which to bestow pensions on retired journalists. In the fight for money the weakest go to the wall. The Army wants money for aeronautics. The present Secretary of State for War has not the personal power to carry through his expressed wishes. Therefore the pressure must come from the country.

Aeroplanes.

Before demanding an increased expenditure it is well to decide beforehand what exactly is required to place the Royal Flying Corps in an efficient state. The greatest need is for aeroplanes. France has in the possession of the Army nearly 600 aeroplanes. Germany, Italy, and Russia have each about 400 machines. Great Britain has, so far as the Army is concerned, perhaps thirty in flying condition. We require at least 200. Some critics say 500 or 1,000. There are academic arguments in favour of the higher number, but it is difficult to see what use could be made under present conditions of a large fleet of aeroplanes. Organisation, transport, etc., must all keep pace with any increase, and everything cannot be done in the space of twelve months. When I say we require 200 aeroplanes, that does not mean that we buy no more than that number. If we follow the example of France over 400 machines would have to be purchased within the year.

France began 1912 with a little over 200 aeroplanes, during the year over 1,000 have been purchased, and the number left fit for use under war conditions is just under 600. Therefore, it is obvious that the annual wastage of aeroplanes is at least 50 per centum of the total number purchased.

Transport.

We require adequate transport. This cannot possibly mean less than one motor vehicle for each aeroplane in use. Hence it is necessary to purchase over 200 automobiles of various types. This cannot be done in a short space of time. Specifications must be drawn up and types standardised.

Aerodromes must be opened throughout the kingdom. Each city, town, or village must have its patch of ground set aside for the use of aviators, civil or military. Had there been suitable landing grounds spread about the country two years ago aviation would have reached a far higher level in Great Britain than is the case. Cross-country flying is the highest form of the aviator's art—the aerodrome pilot is more akin to the circus performer, and fulfils the same purpose in life. But cross-country flying cannot become a common practice until there are other places than private parks or race-courses in which to land.

Here, again, France has set an example to the world. A great number of towns and villages have allotted ground for use as an aerodrome. Sheds are erected in many cases. Any aviator who lands on one of these aerodromes knows that he will be received courteously, and that he will be able to procure petrol and oil at standard prices without any trouble. The existence of these local aerodromes has much to do with the popularising of aviation. It is not given to the great mass of the public that they should take a deep discriminating interest in those things which they have not seen.

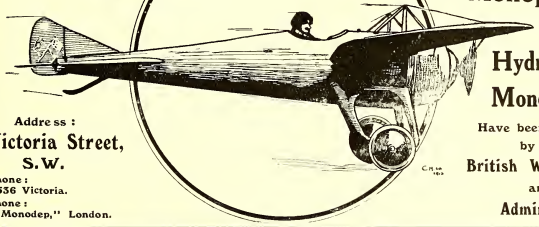
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in the scheme of military aeronautics by the carrying on of such experiments in aero-dynamics and kindred sciences as are too expensive for private manufacturers. A grant of at least £100,000 should be made to this institution from the Army vote. The Factory has a fluctuating source of income from the charges made for repairing aeroplanes belonging to the Royal Flying Corps (Military Wing). No competition should be permitted between the Factory and the manufacturers.

The most difficult question is that of dirigible balloons. Germany stands at the present without rival in this matter. The Zeppelin aircraft is supreme among balloons. We are without experience, and to be without experience is fatal. Any efforts we make during the year must be in the nature of experiments, and those of a costly nature. We cannot hope to build a fleet of dirigibles, and must therefore be content with one or two until the proper lessons are learned. A sum of £100,000 would possibly be adequate for this purpose during the next twelve months.

Subsidies.

There are some who believe that the Government should subsidise private aeronautical firms, that they may show a commercial profit, and be able to continue their existence. The subsidies granted to the great shipping lines are quoted as parallel cases. In point of fact, these subsidies are paid that the Government in time of war may have the use of the subsidised ships. The vessels would have been built, subsidy or no subsidy, and the Government's grant was not necessary to keep the firms concerned in a good commercial position. These subsidies are in the nature of payments made for advantages received.

So, too, should be any aeronautical subsidies. Aerodromes may receive annual payments in return for the right of use of such places by the Royal Flying Corps. Firms owning aeroplanes might also receive annual payments great or small, according to the number of machines they can guarantee to place instantly at the service of the Government in times of national emergency. But it is a violation of the root principles of political economy that manufacturing firms should receive financial aid from the Government except in return for services rendered.

Count von Zeppelin has been financed to some extent by the German Government for some years past, but in his case his factory has been conducted under Government control. He can accept private orders without permission from the Ministry of War. He is, in essence, a Government department.

Pay and Allowances.

A certain proportion of the pay of each pilot in the Royal Flying Corps is drawn from the aeronautical vote, and this has to be allowed for. This will absorb some £60,000 or £70,000. Then, again, there are the premiums of £75 paid to officers in return for the money expended by them in obtaining their pilot-aviators' certificates. Last year this sum was estimated at £3,000. This year it cannot be less than £9,000.

This article treats only of the Army Estimates. Nothing can be said of the Estimates for the Navy owing, firstly, to the different method in which those Estimates are drawn, and, secondly, owing to the fact that there is no reason to believe that the Admiralty are not prepared to insist on receiving an adequate sum for expenditure on aeronautics.

It will be observed that the total expenditure forecasted in the above article amounts to a sum slightly under £900,000.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," February 26th:—

Special Reserve of Officers.

Royal Flying Corps, Military Wing.—Sec. Lieut. (on probation) Thomas O'B. Hubbard is confirmed in his rank. To be Sec. Lieuts. (on probation), February 26th, 1913: Gordon N. Humphreys, Norman C. Spratt, Denys C. Ware, and Joseph J. Hammond.

Admiralty Appointments, February 19th:—

Capt. G. W. Vivian, to the "President," additional, for air service, to date February 18th.

FRANCE.

Limoges, the home of the beautiful in mediæval art, has decided to open an aerodrome for military use. Sheds will be erected by the Ministry of War.

Lieutenant-aviator Mauger-Devarennes was ordered to fly on February 22nd from Verdun to Saint Cyr. Despite the very high wind—42 miles an hour—he started away on his Maurice Farman biplane with a mechanic as passenger. He made the entire flight, 250 kilometres, without descending. The wind rose steadily towards the end of the journey.

The Borel escadrille at Epinal continues to show great activity. Apart from the ceaseless policing of the frontiers, flights have been made over the following routes in the course of the last few days: Epinal-Reims, Epinal-Vesoul and Epinal-Belfort. Lieutenant-aviator Rouin, on a Borel monoplane (Gnome engine), accompanied by Lieutenant-aviator Grezeaud on a Maurice Farman biplane, made a long reconnaissance in the direction of Mirecourt.

Le Chambre Syndicate du Cycle et de l'Automobile has presented the French army with a Deperdussin monoplane (50-h.p. Gnome).

In order to take part in the garrison manœuvres, Quartermaster Bauwens flew from Reims to Verdun on February 24th on a Nieuport monoplane (Gnome engine). The flight took fifty-five minutes.

The Parliamentary Committee inquiring into military aviation visited the centre at Toul on February 25th. Lieutenant-aviator Mazier, flying a Henry Farman biplane, took M. Painlevé for a flight. Demonstrations of flying were made by Lieutenant-aviator Prat, Quartermaster Guiton, and Corporal Foulquier, all on Henry Farman biplanes.

On February 25th ten Blériot monoplanes were dispatched on ten camions to Avor for attachment to the military centre at that place. Avor is rapidly becoming one of the largest of the provincial military aviation centres.

Lieutenant aviator Gouin, at Saint Cyr on February 25th, made a flight of two hours on a Blériot monoplane (Le Rhone motor). On the same day Lieutenant-aviator Lefont made a long flight on a Rep monoplane (Gnome motor).

All the French aviation stations on the German frontier have during the past few months settled down to a systematised reconnaissance. Day by day pilots are in the air watching for signs of military movements over the invisible line which separates a gallant nation from the abode of commerce. At Epinal, Maubeuge, Toul, Verdun, and Nancy there are powerful detachments of highly efficient aeroplanes piloted by officers of great experience. At Maubeuge on February 25th, to quote a case, Lieutenant-aviator Malarme (two-seated Deperdussin monoplane, 80-h.p. Gnome) flew with a passenger over the circuit Maubeuge-LaFére-Douai-Maubeuge. Lieutenant aviator Radisson, with Captain Mounier as passenger, flew along the frontier for eighty kilometres. At the same time, Sergeant-Major Didier and Sergeant Verdié, both on two-seated Deperdussin monoplanes, took up officer-observers and made long training flights in the vicinity of Maubeuge.

On the same day, the Borel escadrille at Epinal—or, rather the following pilots of it: Lieutenant-aviators Battini, Grezeaud and d'Aiguilles, and Quartermaster Quennehen—flew to Nancy and had déjeuner with the pilots of that centre.

On February 28th a new Henry Farman biplane (70-h.p. Gnome) was put through its tests for acceptance by the French army.

Lieutenant-aviators Reimbert, Cheutin and Jolain, and Quartermaster Hurard, all on Henry Farman biplanes (80-h.p. Gnome), left Biskra en route for Tunis on February 26th. On this day they arrived at Tozeur, leaving the next morning at



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9.45 a.m. They reached Gabes at 11.50 a.m. and left again for Sfax in the afternoon Arriving there safely, they left immediately for Sousse, where they all arrived late in the day. Lieutenant-aviator Cheutin damaged his chassis in landing. The escadrille was to start for Tunis on the following day. The high excellence of this flight will be realised when it is realised that the entire journey was made in pouring rain. The entire journey is over 1,000 miles in length. Sfax is 530 miles from Biskra.

Lieutenant-aviator Porteau, of the military centre at Avor, was making a flight on a Blériot monoplane at that place shortly after one o'clock on March 1st, when, owing to overbanking at a turn, he side-slipped and fell from a height of forty feet. He was killed instantly. The base of his skull was fractured and his pelvis and both legs were broken.—W.

GERMANY.

"L.Z.16," the new military Zeppelin, will be ready to be taken over by the German Army next week, and will be stationed at Hamburg and listed as "Z.IV."

The preparations for the naval base at Cuxhaven are going on apace, and a secondary railway line laid to connect the aviation depot, which lies about three miles from the town, with the nearest railway terminus. The first work after laying out the ground will be the erection of an airship hangar.

All the officers receiving instruction at Mulhouse-Habsheim have received their brevets; the course for the non-coms. is not yet concluded. A fresh batch of officers and men is due in March.

Two planes belonging to the Metz Military Station flew from their base to Cologne in 3 hours 15 minutes. The biplane was steered by Lieutenant Schulz, with Major Siegert as passenger, who wished to inspect the new hangar at Cologne. The second machine, a Dove, had Lieut. Kastner as pilot.—B.

A new aviation station is in course of construction at Saarbruck. The Municipality is expected to supply a portion of the expenses, which will amount in all to about £28,000.

The military Zeppelin "Ersatz Z.1" left Cologne recently during the night, and is said to have visited Frankfort, Eidelberg and Carlsruhe, and finally landed at Oss, near Baden, after a journey of eleven hours. During the entire journey it maintained communication by wireless with Carlsruhe.

The Ministry of War intends to hold a competition at Doeberitz for the quick assembly and disassembly of aeroplanes. The winning firm will receive an order for six machines, the second for four, and the third for two.

The naval Zeppelin L1 was by accident carried against the doc[illegible]ged at Johannisthal on February 26th and dam[illegible]ropeller and part of the framework.—W.

RUSSIA.

The Ministry of War has ordered a dirigible balloon from the Parseval firm at a price of £30,000. This is the second of the type ordered for the army.

Some uneasiness has been caused in official circles by the reported appearance of aeroplanes at Okutsk, near Vladivostok. At the other extremity of the Empire, in Russian Poland, a strange aeroplane was seen on February 22nd at 9 p.m. This latter was presumably German, and the former may be Japanese, that country owning certain Curtiss hydro-aeroplanes.

The dirigible balloon "Astra XIII.," is about to undergo trials at Issy les Moulineaux, after which, if successful, she will be dispatched to Petersburg. Her capacity is 10,500 cubic metres and her length 78 metres. Her motors are two, made by Chenu and of 200 h.p. each. These engines drive three propellers.—W.

DENMARK.

M. "Beaumont" was testing at Bezons on February 26th and 27th two 80-h.p. Gnome-engined Donnet-Lévêque hydro-biplanes ordered for the Danish navy.—W.

SWEDEN.

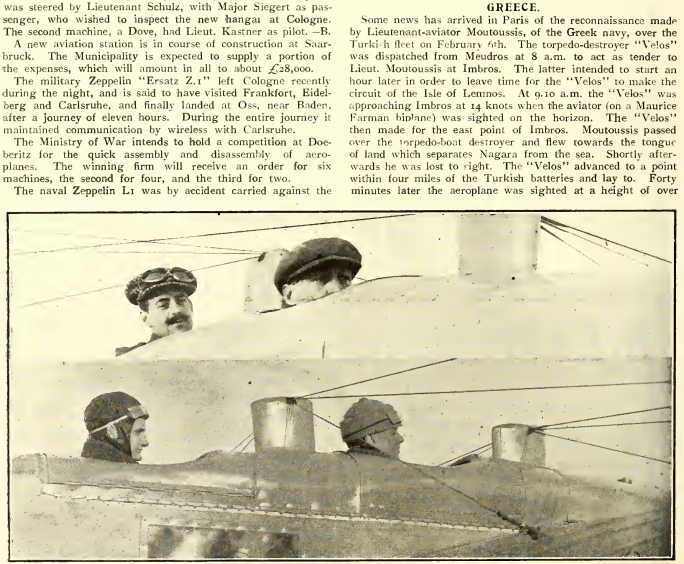
Of the money collected by public subscription for the Swedish fleet, a grant of 500,000 kroners has been made for military aeronautics.—B.

AUSTRIA.

A patriotic committee in Vienna has offered a two-seated Borel monoplane (80-h.p. Gnome) to the Ministry of War.—W.

GREECE.

Some news has arrived in Paris of the reconnaissance made by Lieutenant-aviator Moutoussis, of the Greek navy, over the Turkish fleet on February 6th. The torpedo-destroyer "Velos" was dispatched from Meudros at 8 a.m. to act as tender to Lieut. Moutoussis at Imbros. The latter intended to start an hour later in order to leave time for the "Velos" to make the circuit of the Isle of Lemnos. At 9.10 a.m. the "Velos" was approaching Imbros at 14 knots when the aviator (on a Maurice Farman biplane) was sighted on the horizon. The "Velos" then made for the east point of Imbros. Moutoussis passed over the torpedo-boat destroyer and flew towards the tongue of land which separates Nagara from the sea. Shortly afterwards he was lost to sight. The "Velos" advanced to a point within four miles of the Turkish batteries and lay to. Forty minutes later the aeroplane was sighted at a height of over



Above, M. Jullerot and Captain Landon; below, Mr. Geoffrey England and Lieut. Vaughan, on 80-h.p. Bristol monoplanes.

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6,000 feet returning to Imbros near the shore, at which place Moutoussis alighted. He returned to the port on board the torpedo-boat destroyer, having made a successful reconnaissance.—W.

The Montrose Flight.

The five Army aviators who have been repairing from Farnborough to Montrose happily reached their journey's end on Wednesday, February 26th, having been thirteen days on the "road," the speed average thus approximating to 11.23 m.p.h.

On Tuesday (February 25th) all five left Newcastle, and four of them—namely, Capt. Becke ("B.E."), Capt. Longcroft ("B.E."), Capt. Dawes (Maurice Farman), and Lieut. Herbert (Maurice Farman)—arrived at their destination, Edinburgh. The fifth—Lieut. Waldron (Maurice Farman)—descended near Little Mill, Northumberland, and then flew on to Berwick, whence he proceeded on the following day to Montrose, as did the others from Edinburgh.

The main point which stands out in connection with this flight is the pluck and determination of the five pilots. It is difficult to conceive why the worst possible season of the year should have been chosen for this demonstration, which, so far from constituting a much-needed advertisement for aviation, has had, rather, the effect of confirming public disbelief. "For," says the Man-in-the-street upon perusing this record of short daily mileages, of long halts and occasional mishaps, "if this is all that aeroplanes can do, let us await further development before we begin spending money on them."

That may or may not be sound commercial philosophy; politically, it is mischievous to the point of suicide; moreover, the Montrose flight is not a fair measure of the modern aeroplane's capabilities.

As regards Capt. Becke's unpremeditated descent at Doncaster, Mr. D. W. Cook writes that Mr. Egglestone, of the firm of Wyatt and Egglestone, motor engineers of Doncaster, who had the repairs in hand, reports that one of the cylinders of the Renault engine blew off and the connecting rod swung round loose as the crankshaft continued to revolve, until the end of the rod came out through the crank-case and locked the engine. The tractor screw did not break, but the propeller shaft was twisted round nearly three-quarters of a turn. No other damage was done to the machine, except that a small hole was knocked in one of the planes.

Mr. Egglestone was of the opinion that the direct cause of failure was not due to a piston jamming through faulty lubrication, but that the gudgeon pin breaking with an oblique fracture had probably twisted and caused the two parts to force out into the cylinder walls, the pin being broken in such a way as to suggest this.

Mr. G. T. Cooper, of Edinburgh, writes:—

"On Wednesday, February 26th, Edinburgh saw the Army aviators flying over the centre of the city in order to reach their landing ground at Colinton, which they had the greatest difficulty in finding owing to the fog. Capt. Dawes, in fact, landed a mile away, flying over later in the afternoon. The aviators were for starting off at once for Montrose, but as the fog began to get thicker and difficulty was experienced in getting petrol, they decided to spend the night in Edinburgh.

"In the evening all of them, except Lieut. Waldron, who had not reached Edinburgh, having descended at Berwick, were entertained to a dinner given in their honour by the Edinburgh Aeronautical Society.

"The next morning, owing to a thick Scotch mist, it looked as if the aviators would be unable to go, but shortly before ten the mist rose and the weather conditions become perfect. After a trial flight by Capt. Longcroft, they all set off and, except Lieut. Herbert, who had to descend on account of fog, they all did the trip in very fast time, at about seventy miles an hour."

FOREIGN NOTES.

France.

On February 24th two separate flights were made over Paris. Gilbert, flying a Morane monoplane (Le Rhone engine), and Letort on a Sommer monoplane (Le Rhone engine), passed over the dome of Sacré-Cœur in the afternoon.

M. Maurice Farman's aerial excursion last Sunday was to the Chateau de Chambord. He left Buc with M. Senouque as passenger on a Maurice Farman biplane and arrived at his destination in time for déjeuner, which they had with M. le Comte de Traversée. They left for Buc at three o'clock.

Perreyon, flying at Buc on a Blériot monoplane fitted with a 40 h.p. six-cylinder Anzani engine, attained a speed, officially timed, of 65.86 miles an hour.

It is officially announced that the following entries have been received by the Aero Club de France for the Gordon Bennett Aviation Cup:—Belgium 1, U.S.A. 2, France 3, Great Britain 3, Italy 1, and Germany 1.

At Villacoublay on March 1st M. Gobé flew for one hour and five minutes on a Nieuport monoplane fitted with an 80-h.p. Clerget rotary engine. He carried a useful load of 3 cwt. 81 lbs. The rate of climb was 4,900 feet in 12 minutes.

MM. Marc Pourpre and George Verminck are still in Saigon making flights almost daily. The local enthusiasm does not fade.—W.

M. Favré, the French aviator, has invaded Germany. He did not intend to do so. He set out from Mourmelon with the idea of flying to Bâle to take part in a competition. Of course, he should not have been over Metz, but it was unkind of the gods to choose that he should run out of petrol there. The natives did not give him any "essence"; on the other hand, they did not arrest him as a spy. Choosing a middle course, they packed him and his monoplane off to France by rail very quickly indeed.—A. B.

Germany.

Germany has a new aviator in the person of the erstwhile long-distance cyclist Joseph Fischer, winner of Bordeaux-Paris in 1900 and countless track events. Henry Farman is giving his old racing rival lessons and accompanying him on his early flights.

Lieutenant Mackenthun, one of the most experienced German military aviators, has left the army to enter the services of the Allgmeine Elektrizitats-Gesellschaft, who are about to extend their operations to the aeroplane industry.

Two more fatal accidents have to be reported from Germany, one on the 25th and the other on the 26th ult. The first has robbed Germany of her youngest, and yet one of her most experienced pilots. Bruno Werntgen met his death on the Hangelaar ground at Bonn. He was born in 1892, took his brevet in 1910 as the fortieth German aviator, and soon became renowned for successful cross-country flights, often accompanied by his mother.

With her assistance he formed a company to build aeroplanes, and it was whilst testing a new motor that the fatal accident occurred. Werntgen came down from a height of 60 metres and was killed immediately. The cause of the breakdown is not yet known.

The next day Lieutenant Linke and Sergeant Helferrieder ascended at Mulhouse-Habsheim for a trial. Both men were under military training there, and Linke is in possession of his brevet. On taking a corner too sharply the machine sideslipped, killing the sergeant outright, whilst the officer was severely wounded. Only the day before the two had made successfully a lengthy cross-country tour.—B.

Belgium.

M. Henry Crombez is to represent Belgium in the contest for the Gordon Bennett Aviation Cup. He will fly a monocoque Deperdussin monoplane.

A Great Circuit.

The duration of individual flights has increased so greatly that many of the finest performances of the present day pass almost unnoticed. Of such is the recent "raid" of M. Brindejonc des Moulinais. On February 25th he left Villacoublay on a Morane-Saulnier monoplane (80-h.p. Gnome) at 9.15 a.m. He reached Les Baraques at 10.50 a.m. and left again at 11.40. At a few minutes to 2 o'clock he arrived at Hendon after descending once at Finchley to enquire his way. He left Hendon February 27th at 1 o'clock. After a brief stop at Dover, he reached Les Baraques at 3.12 p.m. On the following day he flew to Brussels and thence to Paris.

Integral.

M. Chauvière has secured another laurel-leaf. The Morane-Saulnier monoplane which M. Brindejonc des Moulinais flew from Paris to London and away again was fitted with an Intégral propeller.

What a Competent Critic thinks of "Lighter than Air."

Mr. H. Massac Buist, writing in the "Morning Post," says:—"After a spell of study necessarily devoted more or less to the serious phases of aviation, it is delightful to come on something written by one who is in the very thick of the aviation movement but whose high spirits are nevertheless not to be repressed. I refer to the publication at this juncture of 'Lighter Than Air: The Aviators Guyed' (Dawson and Sons), by Harry Maitland, with pictures by Herbert Allen. This is claimed to be the most foolish book on aviation yet published. I might add that it contains some of the soundest things ever said on the subject, for the points made are none the less valuable because they are scored in witty fashion. Even those who have no particular idea of what aviation is will find amusement from this, for there are several laughs on every one of the eighty pages. The author is a brother of a member of the Royal Flying Corps. If anybody wants to be amused he can be recommended to such features as 'Tales of Terror for Credulous Cloudsmen,' 'Our Information Bureau,' 'Make Your Flying Machine at Home,' 'What to Read on Aviation,' 'Dora's Devotion: A Dream of Petrol and Passion,' 'Hendon to Hong Kong by Air: British Airman's Non-stop Flight,' 'Aviation and the Medical Faculty,' 'Straight Talks to Aviators,' and so forth. In fact, the book is a laugh from cover to cover, and something of a very healthy corrective as well."

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Major F. H. Sykes on Military Aviation.

On February 26th, at the R.U.S.I., Major F. H. Sykes, Commandant of the Military Wing, Royal Flying Corps, delivered to the Aeronautical Society one of the most interesting addresses yet heard. The Society was particularly honoured by the presence in the chair of General Sir J. D. P. French, G.C.B., G.C.V.O., K.C.M.G., A.D.C., Chief of the Imperial General Staff.

Major Sykes said it was sometimes stated that aviation will revolutionise warfare or even stop it altogether. This, of course, is absurd. The main principles of war will probably remain for centuries. Their instruments, of which aviation is the latest, vary. The principles of war strategy are :—Strategic penetration : Child's play, go for the enemy in his centre ; hold him on one hand ; beat him quickly on the other. Interception : Walk round and masticate him thoroughly from behind. Concentration of superior force at the decisive point : Select the hostile weakest point, his flank or rear if possible ; mass there, and reap the well-earned results.

War, like most other things, is simple, unless you know something about it.

With the introduction of military aviation an all-round speeding up of strategic operations may be expected. If the huge masses of modern armies are found to have been wrongly placed, no amount of zeal, training, bravery, or mobility can make up. The offensive will increase in advantage over the defensive. Leaders must be prompt and correct in decision. Troops prepared to make long and rapid movements. Army Corps will take upon themselves more the rôle of naval squadrons—their positions, strengths and movements will be generally known. There can be no doubt that unless one side definitely obtains command of the air, the cards will be more openly displayed for both. The problems of land warfare which—if he might say so as a soldier—are far more difficult than those with which officers of the Navy have to deal, will tend to approximate more closely to those of naval operations. He looked forward to this with considerable satisfaction.

There would, he thought, be a tendency both in the strategical and tactical stages for commanders to await the reports of their aerial reconnoiterers before deciding what to do. As the strategical merges into the tactical phase, so the reconnaissance work will be modified. Long distance flights will still be advisable to discover possible flanking and reserve movements, but the greater number will consist of short flights to ascertain the tactical position and place the information immediately in the hands of the commander.

In future it is perhaps unfair to assume that one side will have aircraft and not the other. How much will be possible while the enemy is also in possession of an aerial squadron? Neither Tripoli nor the Balkans is a guide. The Italians and the Allies had the air to themselves.

Command of the Air.

General Grierson has told us that war is impossible without command of the air. Though he agreed with General Grierson with reference to war a few years hence, as regards that of to-day, he was not quite certain. He even held that command of the air can never really be of the same nature as command of the sea. Neither can the same extent of strategical or tactical freedom in the area of operations be obtained, which might result from the vigorous use of good cavalry.

Weight and Climbing Power.

At sea and on land there are only two dimensions. In the air the third (climbing) is the difficulty. It may, of course, be overcome. Weight and speed, the problems of naval designers for centuries, are those of aircraft engineers to-day. A fighting machine, with its passenger, gun, ammunition, and possibly light armour, is a heavy machine. It cannot, for some time, be as fast or easy to handle as an unarmed craft. It will climb more slowly, cause more strain on the pilot, and land with less certainty of remaining whole.

It is sometimes argued that it is most advisable at present to develop high speed machines and train flyers for them. It would certainly seem that the fast scouting machine will have advantages over the heavier type so that, if both sides use it, both sides will know a great deal of the opponent's doings. If both sides also have fighting machines, the side upon which these have the least moral effect will have the advantage. A little fighting in the air would, he thought, have a deterrent effect on the moral of the aerial forces of the losing side.

Military aviation is, and must be, dangerous. Those who take it up feel its possibilites for success to their side. They accept its risks. The aircraft of one side will be imbued with greater determination to fight. This side must be ours. Thus again, as usual, we come to the man, the numbers of him available, his patriotism, self-sacrifice, and training.

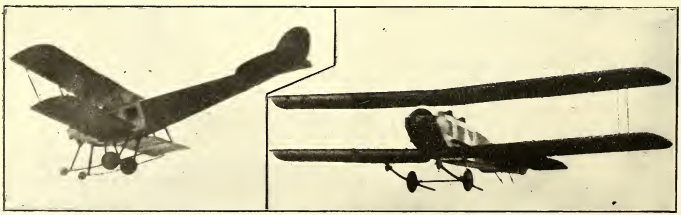
The indications point, then, to two lines of action being attempted by aircraft in war. The reconnaissance work to date demonstrates that each side must attempt not only to gain information, but also to frustrate hostile effort. Certain aircraft will be employed for scouting purposes, others in fighting off opposing aircraft. The attempt to obtain command of the air will probably take place during strategical concentration and before land hostilities commence. It is improbable that superiority once gained will be much affected by fresh machines being sent to the front. The moral effect of original physical success in the air will be too great.

The side which loses command of the air will labour under all the disadvantages of defensive action.

Effect of Aviation on Various Arms.

There has been much discussion as to the effect of aviation on various arms. Infantry is, of course, the arm upon which ultimate success depends. Aviation takes its place with its great auxiliaries—engineers and artillery. Its alliance is closest with cavalry and it affects the action of the masses of an army because it influences the uses to which cavalry is put.

Those anxious to reduce expenditure, argue that as aircraft



The Sopwith Biplane descending from and ascending for the hour test flight.

can reconnoitre well the value of cavalry has ceased to exist. This he thought to be quite unsound. Aircraft and cavalry can help one another in many ways.

The value of information is in proportion to the speed with which it is handed in. Under reasonable conditions of weather and country a general can now within 3½ hours expect a report as to the approximate strength, formation and direction of movement of the enemy, if he is within an 80-miles' radius. A similar result would take cavalry patrols at least three days, while the prospects of acquiring the information would be less.

A weaker cavalry better helped by its aircraft may locate an enemy's cavalry, surprise and fight him on ground best suited to itself and thus clear the way for the infantry main columns. The cavalry will thus be available to help the infantry in the decisive battle.

When opposing troops are close together, aircraft will probably be detached to work with units such as divisions, in order that the information may reach the hands of the subordinate commanders immediately concerned as rapidly as possible.

Recognising Aircraft.

Both with respect to fighting in the air and to firing at them from the ground the recognising of aircraft is difficult. Those accustomed to aeroplanes can often tell to whom they belong by their type. A reduction of the number of types used would help. Tables showing types of both friend and foe, as seen from below, will probably have to be issued to Staffs and troops. In future, aircraft may tend to develop on nationally characteristic lines in the same way as warships have done. The colour of machines, except occasionally, cannot be distinguished if they are over 2,000 feet.

This renders it difficult to umpire on manœuvres. The naval method, whereby two ships speak to each other by wireless and decide any point, is obviously impossible. Nor does firing a rocket to indicate that an aircraft is out of action seem satisfactory. Last year, our Red and Blue Aircraft had to pass one another, and it is a curious fact worth noticing that, owing to the attention of pilots and observers being concentrated on obtaining information as to land forces, they seldom even saw each other in the air.

On manœuvres further unreality is introduced because aircraft are seldom fired at from the ground. This is probably due to disinclination to shoot owing to difficulty in distinguishing friend from foe, lack of experience in judging height (experiments with range-taking instruments to determine the heights of aeroplanes have as yet given poor results), the uncertainty of effecting useful results as against disclosing one's position to the aerial observer; and the possibility of danger to friendly troops by such fire.

Altitudes During Reconnaisances.

The state of the atmosphere decides the height at which reconnaissance should be carried out. Observation is often difficult owing to the clouds, and there is sometimes a tendency to descend dangerously low to obtain information. Bullets will probably quickly right this tendency in war. I understand that the Bulgarian flyers think anything under 4,000 feet unsafe from fire, but bullets must not cause flyers to err on the side of caution when looking for information. The possibility of shrapnel is no excuse for failure. Once obtained results cannot be too jealously guarded. Pilots must in any case endeavour to take advantage of clouds for concealment while minimising their hindrance to observation.

Pilots and Observers.

Piloting and observing entails heavy strain. Battling for even twenty minutes with a heavy machine through a difficult wind is an exhausting task. Probably aeroplanes will be able to fly five days out of six at one time or other. The same pilot and observer should always work together if possible.

Under present conditions it may be estimated that pilots and observers can only be employed for about three hours during the day, or, say, ten hours in three days. On completing his task, a pilot must, if possible, be given a complete rest.

Difficulty has been found on the Continent in obtaining really good observers other than Staff officers. The observer must know instinctively which facts are of importance and which are useless. The untrained officer is of no use. Over easy country a pilot observer in a single seater machine may be able to gather useful information especially if it is a question of large strategical movements.



The Chassis of the latest British Deperdussin.

Night Work.

It would seem that one of the results of the introduction of aircraft will be more night advances to make up for delay occasioned during daylight, or to escape notice. Not much has been done by aeroplanes at night, but such work may be considered one of the most important duties of airships.

The unfortunate soldier must not expect to be free from aircraft at night. His bivouac cooking-fires—when and in what number to use them—will have to be considered, and the fact remembered that they should not be left burning in the morning.

The danger to aeroplanes attempting to land at night is still very considerable. Troops billeted in villages or towns will probably be an uncomfortable problem for the observer. It will undoubtedly be very difficult to estimate their strength.

Handing in Information.

Having obtained information, the greatest value must at once be gained from it. The commander of the aircraft must be in constant touch with the General Staff. It will usually be advisable to send two aircraft if the mission is a very important one, and if you have the aircraft available.

The question of signals from aircraft is a complex one. Lights, puffs, discs, Klaxon horns, etc., have been tried, but the results have, so far, not been entirely satisfactory.

The employment of an aeroplane for the transmission of intelligence from Army Headquarters to the Cavalry Division has been found to answer well.

The French are reported to have sent messages a distance of 50-60 miles by wireless. The difficulty of receiving owing to noise both in airships and aeroplanes has yet to be overcome, and the interference between stations also restricts its use.

Many people are astonished at the apparently extraordinary number of accessories required to keep a number of aircraft in the field. The transport, spare parts, tools, sheds, mooring masts and other absolutely innumerable impedimenta. On manœuvres last year some eight motor cars, 12 light tenders,

10 heavy tenders, and eight Foden steam lorries were fully employed in keeping two airships and 14 aeroplanes going. He hoped that constructors would recognise the difficulties in this respect and give all the help they could towards some degree of standardisation.

It would seem probable that no aeroplanes or engines, and few pilots and observers will last moré than three or four months on active service.

Efficient and sufficient repair lorries are essential, though present experience points to the fact that first aid repairs can only be of the character of replacing damaged parts. More serious damage must be repaired at the Flying Depot at the advanced base.

Sheds, if used, require a great deal of transport and personnel. Many aeroplanes can remain out at night for short periods. Sheds will probably only be kept for overhaul purposes. If, however, a shed could be designed which is sufficiently light to permit of one per aeroplane to be carried without prohibitive transport, the efficiency of the machines and their detachments would be much increased.

The weight of airship sheds, of course, renders them quite prohibitive. Mooring masts and a prayer for good weather have to be put up.

Present Requirements.

To sum up, he thought we want :—

First : For strategical work, a single-seater scout aeroplane with a speed of 90 miles an hour, a landing speed of half that figure, a very high rate of climbing, and a petrol capacity of, say, 300 miles. Good view is also essential.

Second : A two-seater with speeds of 80 and 40, and 200 miles' tankage; carry a light weapon, be a good climber, and be capable of landing on bad ground. Good view.

Third : A two-seater fighting machine with speeds of 70 and 40, to carry a gun, ammunition, light armour, and petrol for 200 miles. Again of good climbing powers.

Fourth : A semi-rigid airship of about 250,000 cubic feet capacity, a speed of 55 miles an hour, keep the air for at least six hours. To carry a crew of eight, a light gun and ammunition, wireless, search-lights, etc.

We still in England are rather apt not to recognise the capabilities of airships. They have not yet attained to really great speed, but their range of action is very large, observation is easy from them, they can hover silently, carry light amament, drop bombs or explosives, they can fly in quite strong winds and rise at a rapid rate. The answer to such vessels other than meeting like with like is at present difficult to see. They are a very formidable weapon.

Major Sykes' Dream.

He dreamt, in the not far distant future, of scouting aeroplanes of 120 miles an hour; fighters to carry pilot and assistant, gunner and observer at a speed of 100 miles; weight-carriers to transport troops, rations and equipment ten or twelve at a time a distance of 30 miles, and make five trips a day. Four hundred of these, and some twenty to twenty-four thousand men are landed a double march ahead, with no weariness of the flesh, but rather physically and mentally braced up by a pleasant journey.

The navies of the world, in his dream, have somewhat to relinquish their present proud position, their rôle is that of floating defence, the air service—built up from joint army, navy, and civilian foundations—is in the foremost line. Fortresses, arsenals, dockyards, Government offices, factories of war material, are protected from the air by an elaborate system of. . . . He did not think he would tell that yet.

But, for England to maintain her political weight in the world, these possibilities must be worked at until the Army and Navy and public understand at least their dangers.

The Discussion.

Mr. O'Gorman, who opened the discussion, said that Major Sykes was a man of action whose dreams came true, and the events that he foretold were not more than a couple of years ahead. The transport of a large number of men by aeroplane was quite possible, as was landing at night. He thought a big machine might be easier to handle and land than a small one. We could have big aeroplanes capable of carrying field guns, and also repair shops. Military aeroplanes and airships in future should need no sheds.

Brigadier-General Henderson, Director of Military Training, said that in his days at the Staff College Staff officers had to train for observation by riding across country—a thing that he hated. In future students would have to do observation trips on a Maurice Farman. Observation training should be in two directions; first, to estimate what the enemy was likely to be doing, and, second, to judge what he was doing. Those in control must teach officers how to observe, and one of the problems for designers was to produce machines on which to teach observers.

Capt. Godfrey Paine, R.N., Commandant Central Flying School, wanted to know how Major Sykes proposed to land a thousand aeroplanes with thirty men each in one place. He had seen about a dozen aeroplanes trying to land in one aerodrome, and even then they got unpleasantly close to one another. If the thousand landed far enough apart, some of the men would have a long march. As regards the design of machines, any ass could learn to fly, but at present constructors had not evolved a chassis that any ass could land on. When that was done, any ass could land at night.

Capt. H. F. Wood (Vickers, Ltd.), said that if the authorities were prepared to sacrifice a little speed they could have large, heavy, fighting machines which could lift as quickly as the smaller machines It was rather difficult for designers to standardise aeroplanes till the people who wanted them standardised their requirements. The 80-mile an hour machine which Major Sykes wanted was to have a radius of action of 200 miles, so that it would not have to lift fuel for 4½ hours, as was required in the Military Aeroplane Competition. If the War Office would give a set test constructors would make the machines.

Major-General Ruck, Chairman of the Aeronautical Society, said we were very deficient in airships. He hoped to see a prize given for efficient fighting aeroplanes. He had not had a dream, but he had had a nightmare of our Royal Flying Corps pitted against a really efficient army; that is to say, one which has an edequate air corps.

Mr. A. E. Berriman said it would be a good thing if aeronautics came to form a link between the Services and the people. He wanted to know which way guns on aeroplanes were to fire—upwards or downwards.

Mr. Cody said that when he was flying at night he could always see the ground with the naked eye well enough to land, except on a pitch dark night. After relating some more of his experiences he said that he was sorry to talk so much about himself, but he was the only person he knew all about. The first machine he made had 1,000 square feet of surface, and would have been able to carry ten men if he had had 400 h.p. Big machines were useful for all purposes, the bigger the better, and he, personally, was tired of building midgets.

General Sir John French said this was the most interesting discussion he had heard at the R.U.S.I. He quite realised the importance of training observers. Aircraft would save horse-flesh, would save gun ammunition, and would save infantry marching and night work. The game would have to be played with cards on the table more than before.

He had always fought for the "arme blanche," and he believed in cavalry actions, because the winning side could dispel the fog of war. He believed that we must now prepare to fight in the air. We owed the Royal Flying Corps a debt of gratitude, and he rejoiced to see sailors, soldiers and civilians working in harmony in the Corps.

General Ruck, in proposing a vote of thanks to the Chairman, remarked on the signal honour received by the Society in having the official head of the Army in the chair.

Mr. Barnwell Pays a Visit.

Mr. Harold Barnwell chose by no means a perfect day for his first out-and-home cross-country trip last Sunday, when he flew the hard-worked "Vickers V" from Brooklands to Hendon and back. The wind aloft was apparently very near 40 m.p.h., and near the ground it was exceedingly gusty. Nevertheless, he made the journey in good time, although taking the long course over Richmond, and seemed remarkably steady when once above 500 feet. The "Vickers V" is considerably faster than she seemes, and one would like to see her turned round a pyloned course such as that at Hendon.

A Belgian Military Specification.

By degrees each nation which has arrived at a true estimation of the value of military aviation is organising and arranging its plans for the proper increase of its aerial forces. When so many diverse types of aeroplanes possessing different attributes and fulfilling different purposes are on the market, it is well that some officially drawn specification should be issued that manufacturers may know what is required of them. Such a specification has now been issued by the Belgian War Office. Each Belgian manufacturer has received a copy that they may, if they so desire, comply with its terms.

All aeroplanes supplied to the Army must be of Belgian manufacture. Each must be two-seated, capable of flying with or without a passenger. If no passenger is carried it must not be necessary to readjust the disposition of the weights nor fly with the elevator in an abnormal position.

Acapote must be fitted in each case that pilot and passenger may be protected from the rush of air. Its strength of construction must be such that in case of accident it will serve to protect its occupants. Space must be provided for a wireless outfit or for the carriage of bombs, etc. The view must be uninterrupted both in front, on both sides, and directly below pilot and passenger. It ought to be possible to give a similar radius of fire to a mitrailleuse or rifle if fitted on the machine.

All controls must be of Farman type with the control lever or wheel placed centrally. A foot bar or pedals will in every case operate the rudder. All control wires must be of cable duplicated in every case. They should be placed in such manner that they can be examined frequently without trouble and that friction may be reduced to its lowest point.

The planes must consist of a wooden framework covered with fabric doped with "Emaillite." The use of indiarubber combined with fabric is not permitted. Strut sockets and metal fittings are to be of steel and not of aluminium. All flying wires must be doubled.

The entire machine must be constructed in such a manner as to make any repair a simple matter.

The landing chassis must be simple and strong with shock absorbers sufficiently powerful to keep the skids from touching ground even when the aeroplane is fully loaded. The breaking of the chassis ought not to weaken the remaining structure.

The following are the maximum dimensions permitted. Span 45 ft. 6 in., length 32 ft. 6 in., height 9 ft. 9 in. Larger machines are permitted in the cases where it is desired to lift greater weight. All standard machines must compress into the following space for transport: length 26 ft., width 6 ft. 6 in., height 9 ft. 9 in. Each must be capable of dissembly in forty-five minutes and of re-erection in one hour with four mechanics only employed.

The total weight in flying order with full tanks (three hours), all fittings, aneroid, inclinometer, speed indicator, etc., 80-h.p. Gnome motor, must be under 800 lbs. The useful weight borne in flight, exclusive of such items as are comprised in above weight, must be 660 lbs.

The propellor must be of similar design to the Ratmanoff or Chauvière. These propellors must have such a pitch that they will turn at 1100 revolutions a minute when driven by an 80-h.p. Gnome motor.

Until a further order is issued the motor to be supplied in every case is the 80-h.p. Gnome. Tanks with capacity for three hours' flight must be fitted.

The minimum horizontal speed of each machine must be 62 miles an hour when fully loaded. The climbing speed when thus loaded (useful load 660 lbs.) must be 1,650 feet in eight minutes. Each machine when supplied must be capable of gliding when fully loaded at an angle of 1 in 4 from a height of 1,650 feet with the engine stopped.

The reception trials are perfectly simple. The machine must be passed by a Government inspector who will certify the excellence of material and construction. A sand test will be made of one of each series of machines supplied. Each machine individually will pass the requisite flying tests specified above.

Silenced motors are considered to be desirable.

It will be seen after even a summary inspection of the above rules that the type of machine desired by the Belgian Army closely resembles the Henry Farman biplane of the latest type. Several of these machines are at present in the possession of the military flying corps (nucleus).—W. E. DE B. W.

The Pathé Roneophone.

A late arrival on the Aircraft Co.'s show stand was the Pathé Roneophone, a practical little machine by means of which a pilot or observer may record his observations without using his hands. The phonographic principle is used, a stout waxen disc taking the place of the more familiar—and much more fragile—cylinder. The machine is placed in any handy position near the speaker; a mouthpiece is fixed conveniently near his mouth; all that the aviator has to do is to press a pedal, thus causing the disc to revolve, and then to describe his sensations to the mouthpiece. He may, by merely shifting a lever, put the recorder out of action and set a reproducer at work, and so listen to his own impressions. On returning to his friends he may land and send the disc to whom it may concern; or, if it is not advisable to land, he may place the disc in a specially designed padded case, to which a parachute is attached, and cast it overboard. The recorder appears to be quite unaffected by the "gnoisiest Gnome" or any other outside sound.

Concerning Benzol.

The motor-buses and taxicabs of Paris are run, for the most part, upon benzol, much of which is manufactured in England. In view of this fact and of the outcry against the increasing price of petrol, it seems extraordinary that benzol cannot be obtained conveniently in this country in quantities of less than one hundred gallons, although its price is little more than half the current price of petrol. Ten years ago benzol was even cheaper—fourpence a gallon, to be exact—because there was practically no market for the amount produced. Increasing demand has raised the price to tenpence, but has not increased materially the amount produced. A further demand for benzol will have a similar effect, for this reason—and here is the master fact of the whole affair—benzol is essentially a by-product; in other words, the quantity produced is not regulated by the demand for benzol, but by the demand for certain other commodities whose production entails the by-production of benzol. That quantity must be produced whether it is wanted or not. A large proportion of the spirit produced to-day is not even recovered, because its recovery would necessitate the replacement of existing distillation plant by modern and very expensive apparatus, a proceeding which the current price of benzol does not justify. At some future date the consumer may become willing to pay a price that does justify the conversion of these primitive ovens, and even the manufacture of benzol for benzol's sake; but that state of things will not come about until the price of petrol exceeds two shillings a gallon—as it does to-day in France, the greatest benzol market.

So says one recognised authority upon benzol and other kindred spirits.

The Edinburgh Aeronautical Society.

Anyone interested is invited to come and see the Society's biplane which will be on view on Saturday, March 15th, at 109, Leith Walk, after 3 p.m. There will be a meeting on March 26th, at the Rutland Hotel, at 8 p.m., when J. Gibson, Esq., will read a paper on "Head Diving," followed by a discussion. All are invited to attend. Castor oil and spares are kept for aviators visiting Edinburgh on application to the Hon. Sec., 41, Drumsheugh Gardens, Edinburgh.

Quick Work.

A quick piece of work was done with the Sopwith biplane last week. On Sunday it was removed from the Aero Show. During the week it was taken to Brooklands and put together. On Saturday Mr. Harry Hawker passed it through its hour flying test, and immediately afterwards Lieut. Spenser Grey, R.N., with Lieut. L'Estrange Malone, R.N., as passenger, flew it to Hendon in a very gusty wind and a thick mist.

Exhibitions at Hendon.

Early on Thursday afternoon, although the wind was gusty and treacherous, Mr. Temple made a short flight in his 35-h.p. Caudron biplane. Mr. Manton and M. Desoutter were up several times on the Grahame-White biplane and the Blériot, respectively. Later, when the conditions had improved somewhat, Mr. Spratt took up a Deperdussin, and Mr. Lewis Turner the 60 Caudron; M. "Vitry" flew the 110 Bréguet.

Hendon was the scene of two interesting debuts on Saturday last, to wit, the Admiralty's 80-h.p. Gnome-Sopwith tractor biplane, which created such a favourable impression at Olympia, and the 75-h.p. Anzani-Deperdussin, also bought by the Admiralty. The Sopwith's flight, after several fine and fast circuits, was brought to a somewhat abrupt termination by the breaking of the rudder-post; it was fortunate, in the circumstances, that so cool and skilful a pilot as Lieut. Spenser Grey, R.N., was at the helm; the occasion called for some pretty fast thinking. Apart from this misadventure, the biplane behaved well, flying fast, and landing slowly.

The new Deperdussin was piloted by Mr. Gordon Bell—the number of different types of machine which this aviator has piloted must now approximate to the mathematical "n." Both the flying and the flight gave rise to much appreciative comment; the machine, which, of course, is British-built, appears to be very fast, and the 75-h.p. Anzani, with its peripheral exhaust pipes, makes less fuss about its job than does its uppish little brother, the "35." In the Dep.'s case also the first flight was rather suddenly ended owing to the ungentlemanly action of a loose scrap of aluminium, which intruded itself into the jet. The second flight was free from incident.

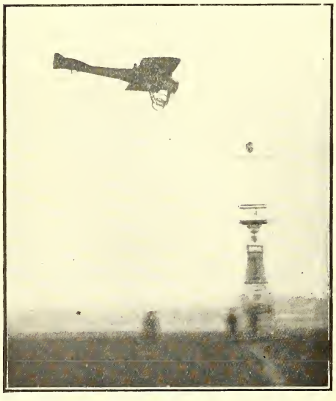
Besides these interesting happenings, Messrs. Manton and Cheeseman did well with the Grahame-White school biplane, M. Desoutter with the Blériot, and M. Verrier—in spite of a sulking engine—with the beautiful Maurice Farman from the Aero Show, flew for long periods. M. "Vitry" also took up the 110-h.p. Bréguet, which flew with its characteristic stateliness, untroubled by atmospheric vacillations.—A. B.

The Sunday was much finer than Saturday, though the wind was higher. The attendance was good, and gave presage of success for the summer.

Shortly before twelve M. "Vitry" started for Brooklands on the Bréguet biplane (110-h.p. Canton Unné engine) with a passenger on board. After landing at Brooklands and staying a short time, he returned to Hendon, the entire journey out and home taking less than an hour.

At 4 o'clock Mr. McClean left Hendon on a Short biplane for Eastchurch carrying a passenger. He arrived safely about fifty minutes later.

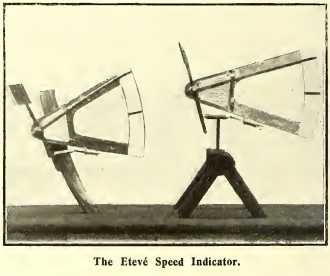
Mr. Barnwell also flew over from Brooklands on a Vickers monoplane (70-h.p. Vickers engine), circled the aerodrome once or twice, and returned to Brooklands. Flights were made during the afternoon by Mr. Manton (Grahame-White biplane), Mr. Desoutter (Blériot monoplane), Mr. Turner (60-h.p. Anzani Caudron), Mr. Cheeseman (Grahame-White biplane), and Mr. Gates (Grahame-White biplane). Several of these latter carried passengers.—W.



Mr. Gordon Bell flying the Admiralty's new 80-h.p. Deperdussin on Saturday.

The Etevé Speed Indicator.

On the Aircraft Company's stand at the Olympia Show there was exhibited the Etevé Speed Indicator. This instrument is now a standard fitting on most of the aeroplanes in the French aviation corps. It consists of a quadrant over which a steel pointer moves. At right angles to this pointer and at its forward end is attached a vertical arm at the head of which is a square plate presenting its face to the rush of air. Pressure on this is transmitted to the index pointer which is held normally at zero by a spring, the tension of which can be regulated by a thumbscrew. No gradations of speed are marked on the quadrant, a red line showing the correct position of the pointer at normal flying speed after preliminary adjustment. A little practice will show the pilot what range of movement of the pointer covers safe flying. The instrument has the greater virtue of absolute simplicity.



The Etevé Speed Indicator.

The Stolz Aerophone.

Mr. Hammer, of the Stolz Electrophone Company, is the inventor of the ingenious instrument which made its debut upon the Handley Page stand at Olympia, where it was seen attached to the Madame Tussaud aviator who steered the H.P. monoplane in safety through the seething mobs of enthusiastic spectators who dilated the Olympia walls day after day. The object of this Stolz Aerophone, as it is to be called, is to allow pilot and passenger to converse easily despite the din of any wind or any aero engine. This object is accomplished by electrical means. A mouthpiece and receiver are strapped upon each aviator's head; the connecting wires may be attached or detached at will by means of plugs, thus the wires and batteries may remain permanently in the machine, and the headgear need not be unstrapped each time the aviator wishes to get out and walk. Furthermore, the mouthpiece, when not in use, may be swivelled up or down out of the way. The main feature of this instrument, however, is the microphone attachment, which magnifies the speaker's voice to the listener's ear, but remains unaffected by any outside sound. The instrument has been thoroughly tried out and found efficient under all conditions by Messrs. Pickles and Meredith, of Handley Page, Ltd.

As Others See Us.

It is always good for trade when experts in another trade begin to take notice of it, because though their criticisms may be ridiculous in many particulars, they are quite often suggestive of new ideas. One of the most entertaining articles in this direction yet published on the subject of aviation consists of a series of comments on the Aero Show published in "The Yachtsman." The writer of the articles does not, unfortunately, sign his name, which is rather a pity, as one would like to have at any rate some knowledge of a personality which manages to produce more self-complacent superciliousness to the square inch of paper than any writer it has been one's lot to read up to the present.

It is true there are a certain number of little points in yacht construction which might, when improved to the necessary point of efficiency, be adopted with advantage in the building of aeroplanes, but apart from the products of one or two really up-to-date boat builders whose revolutionary ideas have naturally caused them to be hailed in their time as cranks by others in their line of business possessed of the true English conservative spirit, the most modern racing yacht of to-day shows surprisingly little improvement on the caveman's "dug-out" canoe, considering that it is the result of anything between five and twenty thousand years of development.

If the aeroplane trade does not produce something better in the next thousand years than boat builders have produced in the last five thousand, it will not say much for the aeroplane trade of 2913 A.D.

The critic in question is most interesting on the subject of hydro-aeroplanes and engines, as witness the following:—"When we come to look at the constructional work of an aeroplane, we find a great similarity between the modern machine and light racing sailing and power craft—in fact, boat builders are in great demand with aeroplane builders. The latest development of the flying machine—the aero-hydroplane, to give it but one of its names—owes even more to the launch designer and builder, as the floats partake of the nature of the hydroplane boat, being, in some cases, really small launch hulls in themselves; while the engines used in aeroplanes cannot fail to be of the very greatest interest to launch owners and builders. But, beautiful pieces of work as many of them are, some are examples of what may fairly be called really bad engineering design, and such that would not be tolerated by a racing launch owner for a minute. It may be urged that the conditions of use are totally different; which may be true to a great extent. Yet what can one think of a firm who (as we understand is the case with one engine shown) make a talking point of the fact that, to take out a single valve, it is necessary to dismount the cylinders—saying that this ensures the engine being kept thoroughly clean internally! We asked the overalled fitter in attendance on one stand how to get a valve out of the 6-cylindered engine we happened to be looking at, and received this quite expressive reply:—'You take down the valve gear, get all the pipes and carburettor off, and then lift a pair of cylinders. And a d—— fine job it is, too!' And does not this express, in a few words, and beautiful English, as much as we could say in a column?"

One is somewhat inclined to agree with him on the subject of engines but the faults of aeroplane engines have nothing whatever to do with the aeroplane constructor. The latter is the victim of the commercial minds in the motor trade, who prefer to go on building obviously defective engines which are good enough for motor cars and boats, and cannot be persuaded that there is anything in the ultimate development of the aero-engine on different lines. Of course, if a hard-thinking engineer set to work to design an engine for aeroplanes from the beginning the first thing he would do would be to get away from the petrol engine altogether simply because of the danger of using petrol for aeroplane work.

This self-satisfied critic continues thus:—"In examining the many fine exhibits at this show, we do so with a fairly critical eye, having a pretty complete knowledge of what is right and wrong in the shape of mechanical construction—as, for example, in light racing sail and power craft—as well as being practical motor designers with a considerable experience in aeroplane work too. And we claim that it needs a man with all these qualifications pretty strongly developed to thoroughly criticise the design and construction of an aeroplane—especially one with floats for marine use. And to such a man, what does a careful—or even a cursory—examination say? Why, this. That there is quite as much room for improvement in detail design, in selection of materials, and, above all, in detail workmanship, as there was in the motor car of over ten years ago. To put it bluntly, there is scarcely a machine in the show that does not offer some evidence of ignorance, carelessness, or want of thoroughness, when one looks into the construction closely. Seeing some of the machines, one does not wonder so much that there have been accidents through breakage of parts, but that they have been so few in number—and it must be remembered that the machines are being improved every day, as the weak places are found out and eliminated or strengthened up. And, as improvements in general design, and increased skill and knowledge on the part of pilots, enable the aeroplane to be used in rougher weather than at present, so will these weak places continue to be found out at the dreadful cost of lost lives, unless makers will realise that their work is not already perfect—as so many appear to think is the case."

One can assure this gentleman, who is, in his own opinion, possessed of so many excellent qualifications, that aeroplane constructors are far from thinking their work is already perfect. It would be difficult to find more than one or two designers who are not painfully recognisant of the fact that the aeroplane of to-day is a very primitive experiment. One of the greatest constructors remarked recently, in answer to the question as to whether the aeroplane of to-day could be compared with the motor-car of, say, 1904, that he considered his machines about on a level with the car of 1897 or 1898. It is apparently only the civilian authorities who seemingly control the Military Wing of the Royal Flying Corps who have any belief that it is possible as yet to standardise aeroplanes, and regard them as fully developed products.

Once more the superiority of the yacht builder to the more aeroplane constructor is impressed on us in this wise:—"We must draw attention to one or two points that strike us forcibly, one of these being the lack of properly spliced eyes in the wire ropes employed in many machines. Of all the machines shown with ordinary stranded wire rope used for stays or controls, not more than two or three have the splices properly made—*our* fashion! The others use all sorts of schemes to avoid having to employ a rigger or a man who can make a wire splice: the ends may be turned back, seized with wire, and soldered; they may be fitted with bolted clamps; they may be inserted into a socket and run in solid with solder, à la Bowden; or the ends may be turned back through a flattened tubular socket, with a couple of bolts, and plenty of solder. Many of the eyes shown must have taken the better part of a quarter pound of solder! Not only is a soldered arrangement like this bodgy looking and heavy, and no stronger than a proper splice, but it must cost about as much to fit, so there does not seem to be a single argument in its favour."

Curiously enough, quite a number of firms have taken to the use of spliced cables, and it may be well to know that so far as the writer's knowledge carries him, there has not been a single aeroplane accident, serious or otherwise, caused by the failure of the joint of a stranded cable, despite the "bodgy looking" jobs which offend our hypersensitive longshoreman.

On the subject of duplicated parts the critic is also interesting. "There is another point in connection with the wire rigging work that cannot fail to be noticeable to a yachting man, that is, the duplication of control and, in some instances, stay wires. We believe the occurrence of more than one accident through breakage of a rudder control or warping connection led builders to fit these wires in duplicate, with the idea that breakage of one part does not necessarily mean an accident. This is just about analogous to the fitting of shrouds and halyards in duplicate, instead of fitting only

one set of proper and sufficient strength to begin with. And now comes the foolish part of this idea—in many cases the duplicate wires are attached to the same eyebolt or other fitting, so that the duplication is only of what is likely (with properly fitted and suitably selected wires ropes) to be the most reliable item of the whole job! We all know that a first-class wire rope may be absolutely relied on every time, and that it is simply a matter of using a proper size, and fitting it properly with good splices and thimbles, large sheaves, and fair leads on and off them. We would undertake to improve the wire staywork of almost every machine in the show, and without more than a fractional increase in cost—if any increase at all. And it must not be overlooked that these machines are constantly under inspection, and that there need never be any question of impossibility to renew a worn piece of gear at short notice, as there may be in a sea-going vessel."

He does not, however, seem to grasp the idea that the reason for duplicating parts is not any fear that the strength of cables may be insufficient, but simply that owing to the fallibility of human nature a joint or splice in one cable may be defective, or a wire-strainer may give way, and if it is, therefore, well to have a second cable in case of accident.

Where the attachment, such as a steel plate or a bolt, is of such size as to stand a greater strain than three or four such cables, there can be very little objection to attaching two cables to one fastening.

On the use of steel the critic evidently gets beyond his depth, as witness the following:—" As was proved years ago by the builders of motor cars, steel tube frames are not to be compared with pressed ones; and so many steel tubes used in aeroplane framings and chassis must be eventually displaced by pressed work."

If his contentions were correct, steel pressings would be used for bicycles as well as for motor cars instead of steel tubing. He must search elsewhere, namely, in the cost book, for the reason for giving up steel tube in motor-car work.

The writer in "The Yachtsman" affects throughout the use of the word aquaplane, which, as has often been pointed out in this paper, means, if anything, exactly the same as the word "hydroplane."

The following extract is also of interest:—" It is quite amusing to notice the extremely complicated methods of achieving quite simple results in some machines, especially in connection with control gear and so forth. And, though there has been a vast improvement in this respect since the last aero show, it would be amusing—if less serious—to see the miserable fastenings sometimes used for quite well-designed and substantial clips, lugs, brackets, and such like." On the whole it is by no means uninteresting to see ourselves as others see us, and one only wishes one had time to compare yachts and motor-boats in detail with aeroplanes, so as to reciprocate these well-meant criticisms.—C. G. G.

A Naval View.

A naval officer writes:" In the light of recent occurrences it would appear that I was correct in assuming the truth of reports on visitations by foreign aircraft, in my last letter.

"Without doubt our 'opposite number' is only tagging behind us in the hurried race for sea supremacy in the sure knowledge that in a short time she will be in a position to advance her 'new arm' and win by many lengths. It only remains for the right people to acknowledge the fact and take the necessary steps to render this menace avoidable.

"At present we do not possess one ship which can in any way impede a 'Zeppelin'—let alone a flight of 'Zeppelins.'

"To those who understand the relation of 'battle cruisers' to a battle fleet, it will be at once apparent that the 'Zeppelin' is to act 'battle-cruiser' to their navy's 'battle-fleet'; and to continue the analogy, 'cruisers' must be forthcoming to patrol, report, and shadow these 'battle-cruisers,' leading them on to the defending 'battle-fleet.'

"A line of twelve 60-knot aeroplanes can be thrown across the North Sea on a cruiser patrol, in a matter of some six hours at maximum, with a fifty mile gap or so. These machines could either carry out a line-ahead patrol at full speed on a line E.N.E. by W.S.W., or a line-abreast patrol at twenty-five mile gaps on a course N.N.W. and S.S.E. In the latter case, advancing would be at full speed S.S.E., and returning at forty knots by night so as to allow the enemy an overtaking speed of some twenty-five knots N.N.W., in the dark astern.

"In a line-abreast patrol, on days of exceptional visibility the line could be staggered by advancing every other machine five or six miles to the S.S.E., so forcing the enemy to enter a triangle of three machines before getting past the line. Either light cruisers or destroyers could repeat wireless between aeroplanes and fleet, or to shore stations.

"It is a matter of common knowledge that a 'flight' of ten such aeroplanes would cost about 1-200th of the price of a 'Lion.'"—C. S.

Captain Faber's Sporting Offer.

Captain Walter Faber, M.P., always an enthusiastic supporter of any movement concerned with the improving of the King's ever inadequately equipped Services, has now started a movement of his own, with the object of remedying—or rather of beginning to remedy—this country's appalling deficiency in the matter of military aircraft. Captain Faber's idea is to raise voluntary subscriptions, on a county basis, to provide a fleet of aeroplanes. With characteristic public spirit and the best intentions, he has offered to open the ball himself by presenting to the nation a large biplane of the latest type, fully equipped, to represent his county of Hampshire, and to be called the "Hampshire."

It is understood that the Government shows signs of interest in the scheme. In itself the idea is old, and is opposed to the first principles of political economy. It should suffice if the counties would provide aerodromes. There is no use in presenting aeroplanes if there is nowhere for them to land.



A Humorous Silhouette of a German Monoplane starting, issued in postcard form by the Garuda Propeller Co. Evidently the Germans do not know the Rubery and Owen release gear.

First Aid in Aviation.

No 4. Bandaging.

The triangular bandage, as we saw in our last article, is extremely convenient and handy for emergencies, but for subsequent use the roller bandage will generally be preferred. The things which can be done with a roller bandage, a skilful hand, and a stout heart are numerous and variegated.

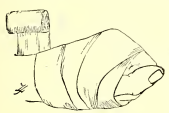


Fig. 1.

To see a surgeon or an experienced nurse clean up a damaged limb and make it look pretty with nothing but six or eight yards of cotton-twill and a safety pin is like contemplating a work of art. Like all arts in which proficiency has been acquired, the thing looks delusively easy. As a matter of fact, it requires considerable practice and some thought to bandage as you would be bandaged, even with the best will in the world and a natural aptitude for doing things neatly.

The following hints and illustrations will be of assistance :—To Bandage the Hand for Severe Cut in the Palm. Place in the middle of the palm a fairly large and firm pad of some absorbent dressing and direct the patient to grip it tightly. With a bandage, bind the fingers firmly over the pad, passing the bandage round the hand and wrist.



Fig. 2.

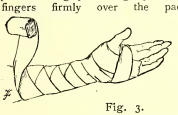


Fig. 3.

To Bandage the Wrist and Fore-arm : Start as indicated in Fig. 2 and carry the bandage up the arm, folding it on itself at each turn (Fig. 3). In this manner the bandage will fit closely to the limb and can be taken as far up the fore-arm as required.

To Bandage the Leg : Raise the foot, and secure the bandage round the ankle by crossing the end on the front of it, as represented in Fig. 4. The bandage is then carried beneath the foot and round the ankle once or twice, then round the leg, each turn over-lapping the preceding one. Turn the bandage down at each turn (Fig. 5) and proceed as for bandaging the arm.

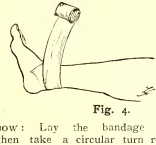


Fig. 4.

To Bandage the Elbow : Lay the bandage over the front of the joint, then take a circular turn round the arm above the elbow and draw the bandage across the joint again. Next take a circular turn round the arm below the elbow (Fig. 6). Repeat the whole process, each time bringing the turns nearer the joint and having the crossings at the bend of the elbow.



Fig. 5.

To Bind a Cut Finger : Well cleanse the wound, cover with a piece of "tabloid" boric lint, over which bind plain lint. Lay a bandage over back and front of finger (A, B, C, Fig. 7) and bind by circular turns up to finger-tip and then back to knuckle. Secure bandage by a turn round the wrist (Fig. 8).

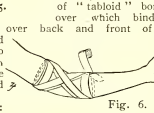


Fig. 6.

Tying a Bandage : Triangular bandages are fixed by tying, roller bandages preferably with safety pins. If safety pins are not at hand, split the bandage lengthwise for some inches, make a knot at the point of division (to prevent further splitting) and pass the free ends in opposite directions round the limb, and tie.

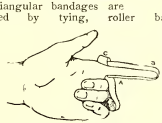


Fig. 7.

In every case of tying a reef-knot and not a granny-knot should be made. Probably every aviator knows the difference, but the subjoined diagrams (Figs. 9 and 10) will make it clear.

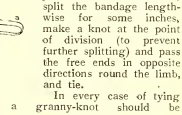


Fig. 8.

General Hints on Bandaging : The following general points with regard to bandaging should be noted :—

(1). In fractures tie the bandages which secure the splints as far from the point of fracture as possible.

(2). Never tie a bandage across a broken part.

(3) Never apply a wet roller bandage ; it will shrink and become too tight as it dries.

(4). When bandaging a limb, always place it in position before putting on the bandage.

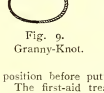


Fig. 9. Granny-Knot.

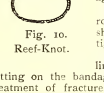


Fig. 10. Reef-Knot.

The first-aid treatment of fractures will form the subject of our fifth article.

Attendance at the Aero Show.

Perhaps the attendance figures of the Olympia Exhibition are not quite so depressing after all. The complete statistics are now to hand, and it appears from these that the paid admissions of 1913 are 50 per cent. up on those of 1911. The paying increase was marked on the last two days—that of the Friday being 80 per cent. and that of the Saturday 110 per cent. This fact speaks volumes ; the British populace is an affair of mass, in three or four senses ; get the thing moving, and a tremendous inertia is translated to an equally tremendous momentum. It might not be a bad plan next year to advertise a date for the opening of the exhibition a week or two in advance of the true date ; then, when the show did actually open, people would have had time to accustom themselves to the idea of it, and one would hear less of "Oh, I am so sorry I missed it ; I really did intend to go."

The total attendance figures (paid and unpaid) for the two years were, on the opening day (Friday), 1,887 in 1911 and 877 in 1913. The particularly low figure for this year is, of course, abnormal, for the public were not admitted on that day until 4.30 p.m. On Saturday there were 6,266 people admitted, an increase of 119. On Thursday, the half-crown day, there were 4,364 in 1911 and only 4,232 in 1913, possibly owing to the fact that so many people are out of town, and that Aero Club members, who have increased by over 1,000, were admitted free. On Saturday there were 6,306 in 1911 and 9,387 in 1913, quite a satisfactory increase.

Experientia Docet.

Mr. Gordon Bell extended still further his experience of various types of machines last Friday, when he flew the 80-h.p. Caudron from Farnborough to Hendon. He took the machine off the ground for the first time at Farnborough and alighted for the first time at Hendon. It may be necessary to point out that pilots do not usually make cross-country flights the first time they try a machine which is new to them. This makes Mr. Bell's twentieth different type of machine.

A Suggestion for a Territorial Air Corps.

During the last year or eighteen months much has been said, and many hard words have been used over the policy of the War Office with regard to military aviation. The result of it is that there is now a chance of our having a respectable air fleet for the Army, and possibly for the Navy. Very little, however, has been done until the last six weeks or so with regard to the Territorials. The case for the Terriers stands as follows:—A few officers have taken their aviators' certificates on machines of various makes at their own expense, and a certain well-known aviator, with his usual patriotic generosity, undertook the task of instructing several members of the London Balloon Section in the piloting and general management of aeroplanes.

And that is about all.

Now there are plenty of young men in the country with brains, ability and engineering training who are keenly interested in aviation, even to designing machines throughout to test some of their theories, and are only prevented from putting their theories into practice by lack of £. s. d.

A great proportion of them would willingly give their services as Territorials if the Government would, in return, finance them, or even only teach them to fly.

Of course, it looks a lot for the Government to finance every designer, and, besides, although it is fairly certain that some of the machines would be improvements on existing designs, others of the machines, although possessing good points, would be practically useless for military work.

I should like to suggest, therefore, that those who are willing to give their services in return for the training in air work they would receive, should be formed into a Territorial Air Corps, and all the machines required by the corps should be designed throughout by members of the corps.

For a section numbering 100 there would be about seven machines wanted, so it would be necessary to hold a competition in order that the best designs obtainable should be found.

Certain specified requirements would have to be fulfilled, such as weight, speed, factor of safety, fuel capacity, and so on, but the choice of design, whether biplane, monoplane or multiplane, would be left very much to the designer's own idea.

The winning designs could be built either by the members of the corps, who would thus get a valuable insight into aeroplane construction, or, what would be better, have the winning machines built at some of the recognised aeroplane factories.

The designers of the winning machines would receive tuition at one or other of the regular schools, to qualify for the ordinary ticket, and then after some more flying on their own machines (built whilst the early tuition was on), qualify for their superior certificate.

They would then be sufficiently qualified to train the various members of their respective crews, i.e., those who were not so successful in the competition, and eventually every member of the corps would be a pilot. And as every member would know for a certainty that he would be taught to fly, whether his own designs were accepted or not, there would be very little chance of any member getting sick of the game and giving up.

The suggested section of 100, mentioned earlier, would be composed and mounted something like this:—

Two three-seaters, two two-seaters, and three singles, ten men per machine as crew, plus two extra for each three-seater, one extra for each two-seater, and a pilot for each machine. Total 83.

In addition there would be a captain and three lieutenants and about a dozen non-com. officers and men for various duties. Grand total, 99.

The cost for the first year, including everything, would run to about £9,000, i.e., about £1,300 per machine, made up as follows:—

Machine	£500
Shed	75
Kit for 14 men at £5 each	70
Repairs	200
Petrol and oil	100
First pilot's ticket	80
Share of preparing ground	175
Incidentals	100
Total	£1,300

That is, a grand total of £9,100 for the first year. Afterwards, as the initial cost of sheds, machines and so on would be done with, the cost of maintenance would come down to a much lower figure. I may have over-estimated some of the items, and if so, the first cost would not be so high.

Of course, someone will want to know just who will benefit by such an arrangement, so I give below the results that would probably be obtained:—

(1) There would be an enormous reserve of men and machines, especially men. A machine can easily be built in three weeks by a proper works, but it takes much longer to put an aviator together.

(2) The best possible designs would be at the service of the Government.

(3) The members of the corps would receive a training that would be of the greatest possible use to them, as they would obtain practical knowledge that they could not afford to get in any other way.

(4) The home industry, by building these machines, would benefit greatly, even as the French aeroplane industry is doing now.

(5) The knowledge obtained by the testing of the various designs would be aiding the movement from a scientific point of view.

(6) The man in the street, by coming in contact with members of the corps would learn more about aviation—nearly as much as the average Frenchman knows.

This article, of course, gives only the very barest outline of such a scheme, but if it helps in any way towards the formation of an efficient Territorial Air Corps, I think it will have done its duty.—S. W.

The "Reception" of the Show Blériot.

On Thursday last (February 27th) Mr. Gustav Hamel was at Eastchurch putting the new 80-h.p. Blériot tandem two-seater through its paces prior to its acceptance by the Admiralty. Those paces appear to be such as a laconic transAtlanticist might characterise meaningly as "some paces." This monoplane (which was bought at the recent Aero Show) is, in its essence, the 50-h.p. machine over again, but a little bit more so in the matter of power, fuel capacity, wing area and span, etc., on account of the passenger's weight. The development in size, so far from affecting the machine's performance detrimentally, seems, if anything, to have improved it.

On this occasion Mr. Hamel, with Engineer-Lieut. Briggs, R.N., as passenger (their combined weight approximating to 23 stone) and a full load of oil and petrol, took the machine to a height of 1,000 ft. in 3:25 minutes. The second thousand was passed in 7 minutes, and the third in 13.15 minutes. The maximum reached was 5,800 ft., where the aviators made a stay of one hour. The flight ended in a glide from a height of 5,000 ft., the machine gliding so slowly that the ground was not reached for 7½ minutes. On landing, the machine came down so flat that it stopped after a run of fifty feet or thereabouts.

Mr. Hamel says that, when gliding, conversation is perfectly easy and convenient, neither pilot nor passenger being troubled by draught. Altogether, the behaviour of this new Blériot seems to have surprised even Mr. Hamel.—A. B.

Concerning Anzanis.

The writer has recently heard it argued that because the magneto of the 10-cylinder Anzani engine turns at 2½ times the engine speed it is, therefore, particularly liable to trouble. This charge, however, is disproved by the fact that the engine used by Lieut. Porte, R.N., in the Military Competition on Salisbury Plain ran for 15 hours in the air between the time it left Salisbury and when it was smashed up through sabotage, and all this running was done with a single set of plugs. It is claimed that, owing to the high speed of the magneto, an exceptionally good spark is given, which makes the engine all the easier to start, and gives it particular freedom from misfiring through oil on the plugs. A good example of economical running was recently given by a 75-h.p. Anzani, which consumed only 29 gallons of petrol and 6½ gallons of oil in 5 hours' running.

The Week's Work.

MONDAY, February 24th.

R.F.C., Central Flying School.—Very dull. Very strong S.E. wind. No flying.

R.F.C., Farnborough.—Weather bumpy, east wind. Mr. Cody out rolling 5 mins. with Lieut. Harrison, then over Fleet and Long Valley at 400 ft. Mr. Bell on 100-h.p. Deperdussin 20 mins. for test, and in afternoon with Mechanic Dent circuits at 1,000 ft. M. Verrier arrived from Hendon on Maurice Farman and flew in afternoon for 10 mins. at 500 ft. Bréguet 213, Major Raleigh, one straight

Hendon.—Mr. F. Maclean on new 70-h.p. Short, on which he arrived on Sunday evening.

At Grahame-White School, W. Birchenough straights with Instructor Manton, later Lieut. Hallowes out. Mr. Bayetto straights on mono.

At Messrs. W. H. Ewen School, Messrs. Lewis, Turner and Baumann out with pupils. Mr. Lawford circuits on 35-h.p. Caudron. On 28-h.p. Caudron, Lieut. Usborne, R.N., straights; Messrs Prosser, Torr and Stewart excellent progress.

At Temple School, Mr. G. L. Temple on Caudron.

At Deperdussin School, Mr. Spratt circuits. Mr. F. Hudson joined school and rolled on Taxi 2. Later, Mr. Spratt circuits on No. 4.

At Blériot School, Messrs. Loftus Bryan and R. Desoutter straights on L.B.2. Mr. A. de Villiers joined school.

Brooklands.—At Bristol School, Mr. Merriam test, then with Lieut. Picton-Warlow, first trip. Later alone, but too bad for pupils.

Salisbury Plain (Bristol School).—Mr. England trial, but weather bad.

TUESDAY, February 25th.

R.F.C., Central Flying School.—Dull, very strong S.E. wind during forenoon, gradually falling to almost dead calm about 4 p.m. On Avro 404, Lieut. Warter 10 mins. (twice); Lieut. Small 10 mins.; Lieut Holt 10 mins. On Avro 406, Lieut. Marks 15 mins. On Maurice Farman 411, Lieut. Longmore with Capt. Vivian, R.N., 10 mins., with Sergt. Street 25 mins. On Maurice Farman 403, Air Mechanic Collis 13 mins.; Lieut. Ross 12 mins.; Lieut. Kennedy 16 mins.; Master Mechanic T. O'Connor 15 mins. On Maurice Farman 425, Lieut. Boyle 9 and 8 mins.; Lieut. Marix 12 mins.; Lieut. Conran 12 mins.; Lieut. Harvey 21 mins. On B.E. 416, Lieut. Allen 12 mins.; Lieut. Burroughs 10 mins. On B.E. 417, Capt. Salmond 8 mins.; Lieut Soames 18 mins.; Lieut. Bigsworth 8 mins.; Lieut. Arthur 19 mins. On Maurice Farman 428, Asst. Paymr. Lidderdale 20 mins. On Short 401, Lieut. Oliver 13 mins.; Lieut. Roupell 12 mins. On Short tractor 423, Major Gerrard with Lieut. Oliver 10 mins., with Sergt. Vagg 10 mins. On Maurice Farman 418, Lieut. Bowhill 11 mins.; Lieut. Glanville 16 mins.; Capt. Tucker 15 mins.

R.F.C., Farnborough.—Mr. Gordon Bell testing 28-h.p. Deperdussin mono at good height.

Hendon.—M. Brindejonc des Moulinais arrived from Paris on 50-h.p. Morane-Saulnier mono at 1.55, having made three stops on the way.

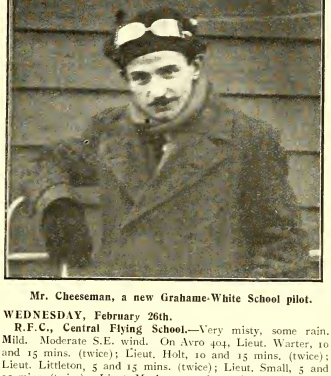
In afternoon Mr. Valentine arrived, and private match was arranged between M. Brindejonc on Morane-Saulnier, Mr. Valentine on 70-h.p. Tandem Blériot, and Mr. R. T. Gates on Grahame-White brevet 'bus. Messrs. Brindejonc and Valentine started level, but gave Mr. Gates 1¾ laps in 4. Result: an easy win for Brindejonc. The Morane with 50-h.p. Gnome had the Blériot with passenger beaten all the time. Mr. McClean was invited to compete, but preferred to do laps alone, his 62-ft. span not being quite the thing for pylon racing.

At W. H. Ewen School, Mr. Lewis Turner on 60-h.p. Caudron two-seater.

Brooklands.—At Vickers School, Mr. Barnwell testing new school biplane.

At Bristol School, Mr. Merriam test with Lieut. Robertson-Dobie. Mr. Bendall also out.

Salisbury Plain (Bristol School.)—Mr. England alone, then with Lieut. Read and Mr. Tower. M. Jullerot alone on 50-h.p. mono.



Mr. Cheeseman, a new Grahame-White School pilot.

WEDNESDAY, February 26th.

R.F.C., Central Flying School.—Very misty, some rain. Mild. Moderate S.E. wind. On Avro 404, Lieut. Warter, 10 and 15 mins. (twice); Lieut. Holt, 10 and 15 mins. (twice); Lieut. Littleton, 5 and 15 mins. (twice); Lieut. Small, 5 and 15 mins. (twice); Lieut. Marks, 15 and 10 mins. (twice). On Avro 406, Major Fulton with Lieut. Rathborne, 10 mins., then Lieut. Rathborne, 10 mins. circuit; Lieut. Marks, 20 mins.; Major Fulton with Lieut. Read, 15 mins.; Air Mechanic Higginbottom with Ldg. Seaman Marchant, 30 mins.

On Maurice Farman 411, Lieut. Longmore with Capt. Vivian, R.N., 20 and 25 mins., with Ldg. Seaman Bateman 21 mins. On Maurice Farman 403, Air Mechanic Collis, 16 mins.; Lieut. Ross, 16 mins.; Lieut. Kennedy, 20 and 22 mins.; Sergt. Stafford, 42 mins., making five landings; Capt. Lithgow, 16 mins.; Asst. Paymr. Lidderdale, 17 mins. On Maurice Farman 425, Capt. Salmond, 7 and 5 mins.; Lieut. Boyle, 15 and 20 mins.; Lieut. Marix, 11, 12, and 19 mins.; Lieut. Conran, 11 and 16 mins.; Lieut. Harvey, 13 and 25 mins.; Asst. Paymr. Lidderdale, 14 mins. On B.E. 416, Capt. Salmond, 5 mins.; Lieut. Soames, 12 mins.; Lieut. Burroughs, 17 mins.; Lieut. Arthur, 18 mins.; Capt. Salmond with Lieut. Dawes, 20 mins. On B.E. 417, Lieut. Col. Cook, 10 mins.; Lieut. Bigsworth, 12 and 13 mins.; Capt. Macdonell, 10 and 11 mins.; Lieut. Soames, 15 mins.; Lieut. Burroughs, 15 mins. On Maurice Farman 428, Capt. Salmond with Lieut. Verron, 12 mins., with Lieut. Soames, 8 mins.; Lieut. Burroughs, 11 mins.; Lieut. Smith-Barry, 13 mins.; Capt. Salmond with Lieut. Arthur, 10 mins. On Short 401, Major Gerrard with Capt. Macdonell, 8 mins.; Lieut. Oliver, 15 mins. On Maurice Farman 418, Major Gerrard with Lieut. Roupell, 10 mins.; Lieut. Roupell, 9 and 13 mins.; Lieut. Unwin, 10 and 15 mins.; Capt. Tucker, 14 mins., Lieut. Bowhill, 15 mins. (twice); Lieut. Glanville, 14 mins.

Hendon.—At Grahame-White School, Mr. W. Birchenough and Mr. E. C. Power, straights with instructor.

At W. H. Ewen School, Messrs Lewis Turner and E. Baumann out with pupils on 28 h.p. Caudron; Lieut. Usborne, R.N., and Mr. Torr, straights on 35 h.p. Caudron; Mr. Lawford, circuits; Messrs. Stewart and Prosser, on 28 h.p. Caudron; Lieut. McMullen took brevet on the 35 h.p. Caudron at 300 ft.; Mr. L. Turner, good flights on 60 h.p. Caudron.

At Temple School, in morning Mr. G. Temple on Caudron, and in afternoon with Mr. Morris as passenger.

At Blackburn School, Mr. Morris rolling practice, and Mr. Spink circuits.

At Deperdussin School, Mr. Spratt, circuits testing; Lieut. Hordern, straights, on No. 4; Mr. Phelps on No. 3. Later Messrs. Whitehouse, Spratt and Valazzi circuits. In afternoon Lieut. Hordern, circuits and figures of eight in excellent style.

At Bleriot School, Messrs. R. Desoutter, Williams, Clappen, Loftus Bryan and de Villiers, all rolling on L.B.1 and L.B.2. Mr Gandillon flying on L.B.4.

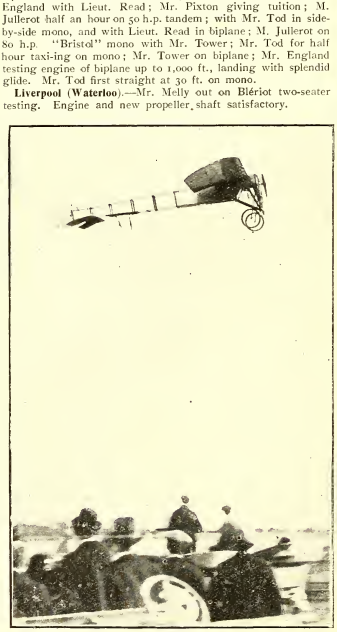
Brooklands.—At Vickers' School.—Major Cameron on No. 3 mono; Mr. Lane flew same machine well; Messrs. Barnwell and Knight, testing new biplane; Mr. Barnwell testing various propellers on No. 5 mono; Mr. Knight on biplane.

At Bristol School, Mr. Bendall, test, and with Lieut. Robertson-Dobie; Mr. Merriam with same over Byfleet to wake pupils; Lieut. Dobie, alone for first time, good straights; Mr. Merriam with Lieut. Picton-Warlow; Mr. Bendall with same; Mr. Merriam, testing new engine, and then with Lieut. Duncan (new pupil); Lieut. Blatherwick alone.

Brighton-Shoreham.—At Avro School, Mr. Powell testing 50 Gnome Avro before flying to Farnborough, brought down near Lancing College, by air lock in petrol pipe. Later made several passenger flights.

Salisbury Plain (Bristol School.)—Mr. Jullerot testing 50-h.p. tandem mono, then with Capt. Landon on biplane; Mr. England with Lieut. Read; Mr. Pixton giving tuition; M. Jullerot half an hour on 50 h.p. tandem; with Mr. Tod in side-by-side mono, and with Lieut. Read in biplane; M. Jullerot on 80 h.p. "Bristol" mono with Mr. Tower; Mr. Tod for half hour taxi-ing on mono; Mr. Tower on biplane; Mr. England testing engine of biplane up to 1,000 ft., landing with splendid glide. Mr. Tod first straight at 30 ft. on mono.

Liverpool (Waterloo).—Mr. Melly out on Blériot two-seater testing. Engine and new propeller shaft satisfactory.



Mr. Hamel getting off at Brooklands on Sunday.



M. Jules Teulade-Cabanes, who took his certificate on a Blériot at Hendon recently.

THURSDAY, February 27th.

R.F.C., Central Flying School.—Dull, moderate N.E. wind. On Maurice Farman 411, Lieut. Longmore with Sergt. Street 13 mins., with Ldg. Seaman Bateman 5, 12 and 19 mins., with Capt. Vivian, R.N., 18 mins. On Maurice Farman 403, Air Mechanic Collis 10 mins.; Sergt. Street 20 mins. (twice); Lieut. Kennedy 20 mins.; Capt. Salmond 9 mins. On Maurice Farman 425, Lieut. Boyle 80 mins. cross-country flight to Whitchurch and back; Master Mechanic T. O'Connor 15 and 27 mins. On Maurice Farman 429, Lieut. Longmore 27 mins. and Lieut. Conran 8, 9, 10 and 11 mins. testing new wireless apparatus. On B.E. 417, Lieut. Soames 11 and 32 mins.; Lieut. Arthur 20 mins.; Lieut. Burroughs 10 mins.; Capt. Salmond with Sergt. Rigby 33 mins. On Maurice Farman 428, Capt. Salmond with Sergt. Mead 10 and 16 mins. On Short 401, Lieut. Bowhill 50 mins. On Maurice Farman 418, Lieut. Glanville 16 mins.; Lieut. Unwin 20 mins.; Lieut. Roupell 5 and 20 mins.

Hendon.—Quite enthusiastic crowd at Aerodrome. M. Brindejonc des Moulinais left for Calais at 1 o'clock. Bréguet, with "Vitry" up, was flying well. Mr. Pickles smashed wing of Handley Page, through warp jambing.

At Grahame-White School, Mr. T. H. P. Bayetto on mono. Mr. Birchenough on No. 7 biplane. Exhibitions by other pilots.

At W. H. Ewen School, Mr. L. Turner exhibition on 60-h.p. Caudron.

At Temple School, Mr. Temple short flight on Caudron.

At Blackburn School, Dr. Christie straights 40 mins.

At Deperdussin School, Mr. Spratt testing and in afternoon giving exhibitions.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight on new school biplane, machine fast and well-behaved in 20-mile breeze.

At Bristol School, Mr. Merriam alone and twice with Lieut. Picton-Warlow. Lieut. Robertson-Dobie straights and half circuit.

Brighton-Shoreham.—At Avro School, Mr. Powell on Gnome-Avro 15 mins.

Salisbury Plain (Bristol School.)—Mr. England on 80-h.p. mono with Mr Tod over Amesbury and Bulford at 4,400 ft. Later, Mr. England out again on biplane, but weather too bumpy for tuition. M. Jullerot out alone on 80-h.p. mono.

FRIDAY, February 28th.

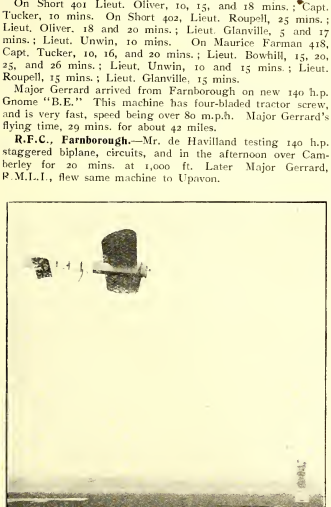
R.F.C. Central Flying School.—Dull. Moderate northerly wind. On Avro 406, Major Fulton, 5 mins. alone, with Lieut. Read 15 mins., with Capt. Mellor 50 mins. on practice ground; Lieut. Read, 10 mins.; Lieut. Rathborne, 10 and 30 mins., and passed for brevet; Air Mechanic Higginbottom, 5 mins. alone, with Air Mechanics Smyrk, Baldock, and Clarke, 10 mins. each. On Maurice Farman 411, Lieut. Longmore with Air Mechanic McNamara, 15 and 20 mins., with Ldg. Seaman Bateman 20 mins., with Capt. Vivian, 34, 38, 40 and 50 mins., with Capt. Paine, R.N. (Commandant C.F.S.), 30 mins. On Maurice Farman 403, Sergt. Stafford, 15 mins.; Sergt. Street, 19 mins.; Ldg. Seaman Bateman, 20 mins., landed well, but accidentally switched on and dashed into brick wall, damaging machine rather badly.

On Maurice Farman 425, Master Mechanic T. O'Connor, 52 mins., extended flight over and around Devizes; Lieut. Harvey, 56 mins.; Lieut. Ross, 19 mins.; Lieut. Kennedy, 22 mins. On B.E. 416, Capt. MacDonell 5 mins. and 10 mins. (three times); Lieut. Burroughs, 15 mins.; Capt. Salmond with Lieut. Dawes, 25 mins., with Lieut. Thompson, 30 mins. On B.E. 417, Capt. Salmond 7 mins. alone, with Sergt. Rigby 40 mins., with Lieut. Verron 20 and 31 mins., with Major Trenchard 46 mins.; Lieut. Arthur, 22 and 25 mins.; Lieut. Bigsworth, 16 and 18 mins.; Lieut. Soames, 25 mins.; Lieut. Burroughs, 23 mins. On Maurice Farman 428, Capt. Salmond, 12 mins.; Lieut. Burroughs, 8 mins. (twice).

On Short 401 Lieut. Oliver, 10, 15, and 18 mins.; Capt. Tucker, 10 mins. On Short 402, Lieut. Roupell, 25 mins.; Lieut. Oliver, 18 and 20 mins.; Lieut. Glanville, 5 and 17 mins.; Lieut. Unwin, 10 mins. On Maurice Farman 418, Capt. Tucker, 10, 16, and 20 mins.; Lieut. Bowhill, 15, 20, 25, and 26 mins.; Lieut. Unwin, 10 and 15 mins.; Lieut. Roupell, 15 mins.; Lieut. Glanville, 15 mins.

Major Gerrard arrived from Farnborough on new 140 h.p. Gnome "B.E." This machine has four-bladed tractor screw, and is very fast, speed being over 80 m.p.h. Major Gerrard's flying time, 29 mins. for about 42 miles.

R.F.C., Farnborough.—Mr. de Havilland testing 140 h.p. staggered biplane, circuits, and in the afternoon over Camberley for 20 mins. at 1,000 ft. Later Major Gerrard, R.M.L.I., flew same machine to Upavon.



Miss Trehawke-Davies and Mr. Valentine on the new 70-h.p. Blériot.



Mr. Lane, who took his certificate on a Bristol at Brooklands.

Hendon.—At Grahame-White School, Mr. Birchenough out and Mr. Bayetto on mono.

At W. H. Ewen School, Commander Schwann, R.N., took up 35 h.p. Caudron for 25 mins. in spite of 30-35 m.p.h. wind. During afternoon pupils out with Messrs. L. Turner and Baumann, Lieut. Bayly, Messrs. McGregor, and Zubiaga, good progress; Messrs. Torr, Prosser, and Stewart, straights; M. Baumann alone on 35 h.p. Caudron; Mr. Lewis Turner alone and with passengers on 60 h.p. two-seater Caudron; Mr. Gordon-Bell arrived from Brooklands on 70 Gnome two-seater Caudron, doing trip in 20 mins., finishing with a corkscrew.

At Depердussin School, Mr. Spratt testing, then handed over to Mr. Whitehouse, who flew out across country; Lieut. Hordern figures of eight; Mr. Hudson (new pupil), on No. 2 rolling.

At Blackburn School, Mr. Spink circuits, Mr. Morris rolling.

At Temple School, Mr. Temple up in 29 m.p.h. wind, going down Collindale Avenue, and finishing with good glide with engine switched off.

At Bleriot School, Messrs. Loftus Bryan and Clappen straights on L.B.1; Mr. Valentine on tandem, landed with wind behind, and machine endeavoured to remove fence with left wing, to detriment of wing.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight on biplane with Major Cameron; Mr. Lane on No. 3 mono, and Mr. Barnwell testing new propeller on No. 5.

At Bristol School, Mr. Merriam with Lieut. Picton-Warlow. Mr. Bendall with Lieut. Duncan. Mr. Merriam with Lieut. Morgan (new pupil) 1,000 ft. Mr. Bendall with Lieut. Picton-Warlow. Lieuts. Blatherwick and Roberston-Dobie alone.

Brighton-Shoreham.—At Avro School, Mr. Powell out alone in fog, then with passenger 20 mins. Mr. Simms testing Isaacson-Avro in afternoon.

Salisbury Plain.—At Bristol School, Mr. England with Mr. Tod on 80-h.p. mono. Capt. Landon and Mr. Tod on same to 2,000 ft. Capt. Landon on biplane with Mr. England, then for first flight alone. Mr. Tower on biplane. M. Jullerot on 50-h.p. tandem mono. Mr. Tod straights on 80-h.p. mono. Mr. Pixton on 80-h.p. mono with Mr. Fellows. Mr. Pixton on 80-h.p. mono with Lieut. Chiscaneanu to 1,400 ft. Mr. England with Lieut. Parvelescu. M. Jullerot with Lieut. Negrescu on 80-h.p. mono. Mr. Tod gave fine show on "sociable" mono. Lieuts. Negrescu, Parvelescu, and Chiscaneanu each alone in 50-h.p. tandem mono.

SATURDAY, March 1st.

R.F.C., Central Flying School.—Dull, slight mist early. Freshening easterly wind, blowing gale by 10 o'clock. On

Avro 404, Major Fulton with Air Mechanic Harrison 20 mins.; Lieut. Read (twice) 10 mins.; Lieut. Rathborne 10 mins. On Maurice Farman 411, Lieut. Longmore with Air Mechanic McNamara 19 mins., with Sergt. Kemper 19 mins. On Maurice Farman 425, Air Mechanic Collis 15 mins. at 2,000 ft.; Capt. Salmond 65 mins. cross-country flight to Downton and back. On Maurice Farman 427, Lieut. Marix 23 mins. On Maurice Farman 415, Engineer Lieut. Randall with Air Mechanic Cox 10 mins., with Chief Mechanic Scott 15 mins.; Lieut. Longmore with Air Mechanic Lloyd 15 mins. On B.E. 417, Capt. Salmond 6 mins. alone and with Sergt. Rigley 7 mins. On Short 404, Major Gerrard with Sergt. Vagg 5 mins., Sergt. Vagg 14 and 15 mins., doing figures of eight and practising for brevet. On Short 402, Lieut. Oliver 13 mins.; Lieut. Roupell 12 mins. On Maurice Farman 418, Capt. Tucker 50 mins.

On B.E. 408, 140-h.p., Major Gerrard with two passengers, Lieut. Oliver and Sergt. Vagg, 20 mins.

R.F.C., Farnborough.—Very very bumpy; one wind Lieut. Harrison on Cody biplane rolling 10 mins.; Capt. Reynolds on same with Major Raleigh rolling 10 mins.; then Major Raleigh rolling 15 mins. Bréguet 210, Major Raleigh, circuit at 1,000 ft., after repairs.

Hendon.—At Grahame-White School, Mr Lan Davis straights on mono No. 2, and Mr. Bayetto on mono No. 4.

At W. H. Ewen School, Messrs. Torr and Gist good straights on 28-h.p. Caudron under M. Baumann. Lieut. Bayly and Messrs. Lawford and Zubinga on 35-h.p. Caudron under Mr. Turner.

At Temple School, Mr. G. L. Temple on Caudron.

At Deperdussin School, Mr. Gordon Bell took out new 80-h.p. Deperdussin ordered by the Admiralty for first flight of about 20 mins.

At Blériot School, Capt. Cox joined school.

Brooklands.—At Vickers School, Mr. Barnwell and Capt. Wood on school biplane early. Capt. Wood with Mr. Knight as passenger. Mr. Barnwell flew No. 5 mono. Mr. Knight took Major Cameron on biplane, Major Cameron then alone in bumpy wind, doing very well. Wind having stopped all box-kite work, Mr. Barnwell on No. 5 mono testing engine adjustment. In afternoon Mr. Barnwell gave prospective pupil a ride on school biplane.

At Sopwith Co., Mr. Howker passed new tractor biplane through Admiralty test, and handed over to Lieut. Spenser Grey, R.N., who flew to Hendon with Lieut. L'Estrange-Malone.

At Bristol School, Mr. Merriam with Lieut. Picton-Warlow, Mr. Bendall with Lieut. Robertson-Dobie. Lieut. Blatherwick alone, descending in spiral glide. Mr. Bendall with Lieuts. Morgan and Duncan.

SUNDAY, March 2nd.

Hendon.—At W. H. Ewen School, Mr. Turner out on the 60 Caudron.

At Grahame-White School, usual fine exhibitions. (See special report.)

Brooklands.—At Vickers School, Mr. Barnwell made a non-stop flight to Hendon and back on No. 5 mono. Capt. Wood flying biplane alone and with a passenger.

Mr. Hamel on Blriot over 7,000 ft., getting lost to sight.

Mr. Raynham on Coventry Ordnance biplane, doing long glides from 2,000 ft. and over.

At Bristol School. Mr. Merriam fine show of spiral glides. Then he and Mr. Bendall up with passengers.

Brighton-Shoreham.—At Avro School, Mr. Powell on Gnome Avro in afternoon, landed easily, but on running along ground steel skid-spoon sheared off and machine turned over. Pilot unhurt, but delivery to W.O. will be delayed.

General Supplies.

Some interesting leaflets are to hand from the General Aviation Contractors, Ltd., of 30, Regent Street, dealing with Anzani engines, Gnomol castor oil, and Emaillite dope.

As has been mentioned several times recently, the Anzani is probably the most improved engine in existence to-day, and its many recent successes have been recogised by the fact that the War Office are having one of the new 100 h.p Anzanis fitted to the British Deperdussin monoplane which went through the Military Competition with another engine.

These engines are now made in five sizes. The smallest is



Signorina Rosina Ferrario, the first Italian aviatress.

the popular 3-cylinder "Y" type 35 h.p., the bore and stroke being 105 by 120 mm., and the weight 121 lbs. Next comes the 40-45 h.p., with 6 cylinders, 90 by 120 mm., at 154 lbs. Then the 50-60 h.p., with 6 cylinders, 105 by 120 mm., at 200 lbs. Followed by the new 70-75 h.p. with 10 cylinders, 90 by 120 mm. at 238 lbs. And finally the 100-110 h.p. with 10 cylinders, 105 by 140 mm. at 308 lbs.

It may be observed that with all these types only two sizes of pistons are used, namely, the 90 mm. and the 120 mm., which permits a high degree of interchangeability of parts. The new type engines have no ports in the cylinder walls, so that they no longer sling oil as they did, and the lubrication has been greatly improved by the use of a forced feed.

Gnomol oil is strongly recommended for use in these and all other aerial engines, and this oil has been produced as the result of long experimentation by well-known foreign chemists. It is used by some of the most experienced aviators and school managers in this country and abroad.

Emaillite dope, which one hears pronounced in all its varieties from "emmalite," "eemale i ite," "em-mile-ite," to the more or less correct version of "em-mai-eet," is, of course, well known as the varnish which, as used on the Deperdussin wings, first showed constructors in this country what could be done in the way of keeping wings taut in all weathers. A specially supple varnish is also supplied for use on balloon fabric.

A Car Specialist.

Mr. Conway Jenkins, who was at one time an excellent pilot of the Avro biplane, has been established for some time at Empire House, Piccadilly, as an automobile agent, and is specialising somewhat on cars for aviators. He has recently sold a car to Captain J. H. Becke and another to Captain H. R. P. Reynolds, both of the Royal Flying Corps. He always has a very good stock of second-hand cars, often of a type particularly suitable for aviators, at prices from £100 upwards, and he can supply practically any make of new or second-hand cars. He takes second-hand cars in part payment for new ones, and in certain cases would arrange deferred payments on new cars.

TheApotheosis of the Tippling Pauper.

Aviators, and, indeed, all persons concerned with internal combustion engines, ought to doff their hats to the Dipsomaniac, particularly to the unfortunate fellow who cannot afford to hallucinate himself on even the cheapest potable spirit now retailed, for it is to prevent this estimable type of citizen (whose value to the State at large is considerably less than nil) from dying, as he desires, in delirium tremens on the cheap, that our altruistic governors have penalised the manufacture of one of the finest, cheapest, and most easily produced internal combustion fuels that Nature has devised —to wit, Alcohol.

MISCELLANEOUS ADVERTISEMENTS

PATENTS.

PATENTS. Instructive leaflet free, from Stanley, Popplewell and Co., Chartered Patent Agents, 38, Chancery Lane, London, W.C.

ADVICE FREE on Patents and Trade Marks. Handbook gratis.—KING, Registered Patent Agent, 165, Queen Victoria Street, London.

"HOW TO TAKE OUT PATENTS IN ENGLAND AND ABROAD." (By Arthur E. Edwards, F.C.I.P.A.) 2s. post free.—ARTHUR EDWARDS AND CO., LTD., Patent Agents and Consulting Engineers, Chancery Lane Station Chambers, W.C. 'Phone 4536 Holborn.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

MODELS.

THE DING QUALITY MODEL MONOPLANE—metal construction—a unique engineering job. Every part detachable and interchangeable. Our descriptive booklet will interest you.—The W. R. DING COMPANY (late Ding, Sayers & Co.), 24-32, Villa Road, Handsworth, Biringham.

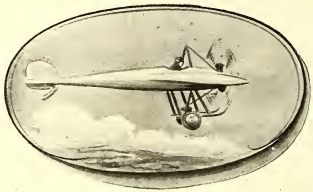
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FLYING at HENDON

SEASON



1913.

EASTER. The 4th London Aviation Meeting will be held during the EASTER HOLIDAYS, FRIDAY, MARCH 21st, to EASTER MONDAY, MARCH 24th. Speed and Altitude Competitions for Prizes will take place each day (weather permitting). Announcements ater.

FLYING DAILY. Special Exhibition Flights, Speed and Altitude Tests by well-known Aviators every THURSDAY, SATURDAY and SUNDAY afternoon (2.30 p.m. till dusk). Admission to Enclosures, 6d., 1s. and 2s. 6d. (Paddock). Children under 10 years, Half Price. Motors 2s. 6d. (includes Chauffeur). The London Aerodrome at Hendon is situated in delightful open country (6½ miles from Marble Arch), and is easily reached by Tube or 'Bus.

FLYING RACE MEETINGS Will be held every SATURDAY and BANK HOLIDAY throughout the forthcoming Season. FIXTURE LISTS ON APPLICATION.

PASSENGER FLIGHTS Daily (weather permitting). From £2 2s. Arrangements can be made for Single or Party Flights at the Aerodrome, Hendon, or at the Box Offices of Messrs. Keith Prowse, Ashton and Mitchell's, etc., and 166, Piccadilly, W.

LEARN TO FLY At the Grahame-White School. See Tuition Announcement on page 299 for particulars.

SEASON TICKETS. GENTLEMEN, £2 2s.; LADIES, £1 11s. 6d. Children (under 13), £1 1s. Motor or Carriage (including driver if in livery), £2 2s. Can be obtained at London Aerodrome Offices, 166, Piccadilly, W., and are available on any day during 1913 when Aerodrome is open to the Public.

SOUVENIR. A Profusely Illustrated and Interesting Record of Flying at Hendon during 1912. Post free 6d. from London Aerodrome, West End Offices, 166, Piccadilly, W.

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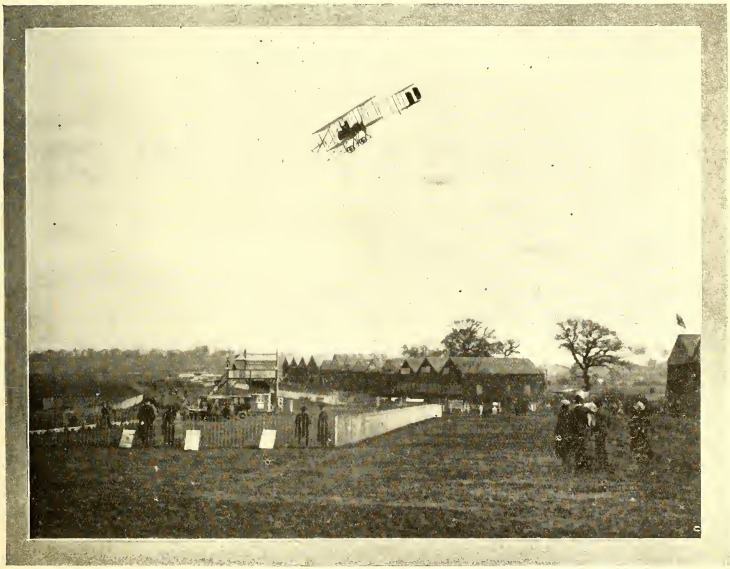
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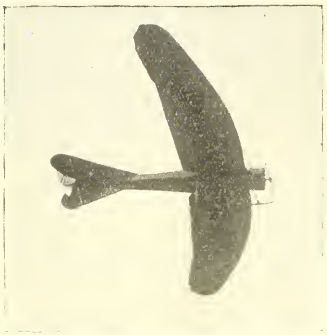
1D WEEKLY

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, MARCH 13, 1913. No. 11.

A TYPICAL TURN



M. Verrier with a passenger on the Aero Show Maurice Farman biplane (70-h.p. Renault engine) making one of his typical turns at the Hendon Aerodrome, March 8.



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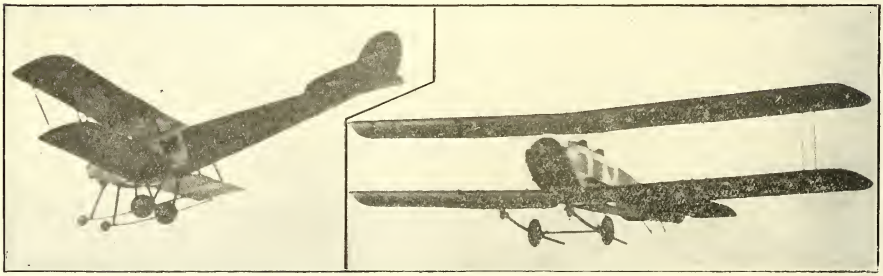
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London.

The Identification of Aeroplanes.

The publication of the new "Laws of the Air" give particular appositeness to a point raised by Major Sykes, Commandant Military Wing, Royal Flying Corps, in his lecture to the Aeronautical Society, and I was asked a question on the same subject recently by an attaché at one of the Embassies, who wanted to know how it was proposed to identify the nationality of an aeroplane in time of war.

The problem is one of the most knotty of those to be solved by the Services, for it is obvious that machines must be identified somehow, or we shall have armed aeroplanes belonging to the same side fighting with one another, and troops below firing at their own air-scouts. This has, in fact, already happened, for Mr. Snowdon Hedley relates how he was fired upon when landing by Bulgarian infantry, despite the fact that his machine was plentifully painted with the Bulgarian colours. The fact that the officer commanding was profusely apologetic on discovering his mistake did not console the pilot for having been compelled to take refuge in a particularly evil ditch till the firing ceased.

As Major Sykes pointed out, the colour of machines cannot be distinguished above 2,000 feet unless the light falls on them in a particular way. Anyone who has seen much high flying will acknowledge the truth of this. Seen against the light or against a dull sky all machines are black, and on a sunny day when the light catches the shiny surface of well "doped" wings they appear white. It is very seldom one can see whether they are white, brown, yellow, blue, or red. Only plain colours have been used so far, but I doubt whether striped machines would show up any better. Even the new check suits of the Deperdussins, startling as they are on the ground, tone down to a uniform brown at any height.

One apparently obvious method of identification is simply to know what makes of machines one's opponent possesses and identify them by their types, as sailors can recognise the nationality of any ship they see. This is all very well so far as it goes, but makers have an unfortunate custom of selling their aeroplanes to whomsoever will buy them, regardless of the complications which may ensue. For instance, suppose the much-expected war between the Triple Alliance and the Triple Entente did break out, who is to distinguish between Blériots, Nieuports, and Bristols, owned by France, Russia, and Great Britain, and similar machines belonging to Italy and Germany. And supposing the Etrich, belonging to the Admiralty, should ever be induced to fly, it might quite well be mistaken for an Austrian craft, or even for a Rumpler "Taube."

Attempts have been made to signal from an aeroplane to the ground by means of smoke puffs from a special apparatus carried on board, and if this method was successful it would be an excellent way for a pilot to indicate his nationality, but so far as one can gather the only connection the idea has had with signalling has been to fail signally in practice.

Another taking idea is the fitting of a semaphore under the fuselage. This might work if the machine was always to be seen in profile, but an end elevation or a "worm's-eye view" would destroy its efficacy at once, while the side area of the semaphore might introduce complications in control.

Something might be done by arranging that a pilot on approaching his own lines should execute a certain manœuvre to establish his identity, say two circles to the left, one to the right, followed by a short dive and a swerve to the left. This would be very well so long as the engine was running properly and the machine was under proper control, but a damaged machine might find the signs difficult to execute. The idea is, of course, only an adaptation of the French method of signalling the result of artillery fire; two sharp dips for short, two short rises for long, and a swerve to left or right to indicate the line. This has, I hear, been abandoned because on a gusty day the pilot might have to do the dives to keep his machine under control just when he really wished to signal a long. In the same way a pilot might well be prevented from executing the desired evolution and find himself in the sad position of risking his neck in order to disclose his identity or being shot if he did not.

It seems to me that there are two possible methods by which in time of war aeroplanes may indicate their nationality, one is by flags, and the other by specially shaped elevators and rudders.

It is comparatively common for pilots to fly flags on the struts of biplanes, and they do not apparently interfere with the speed of the machine. Also, I have a vivid recollection of the consternation of one Flanders, on seeing a monoplane of his make descending from an altitude of some 3,000 feet with a long streamer floating from the elevator. Horrific visions of stripped fabric and an uncontrollable descent rose before us, but to our immense relief the machine landed perfectly. When we rushed to inspect the damage to the tail we found that the pilot Raynham had allowed his scarf to blow off and that it had hooked itself on the tip of the elevator frame, where it streamed out for a couple of yards without affecting the machine in the least.

It seems possible therefore that flags might be carried attached to the trailing edge of the elevators and to the rudder. If these were made of some thin, transparent coloured material, it should be possible to see their colours with the aid of ordinary

field-glasses, and if this were proved to be impossible something might be done by making the flags a special shape, which could be easily recognised when the machine was overhead.

Naturally, experiments would have to be tried to find out whether there was any possibility of the flags getting entangled with the controls, though it hardly seems that they could possibly become so, owing to the slip-stream of the propeller being greater than any possible side gust.

By the exercise of some ingenuity it might even be possible to carry the flags furled, so that they would only be broken out when the pilot desired to establish his identity on nearing his own lines.

The other suggestion is that all machines built for military purposes shall have elevators and rudders of a prescribed shape. Apparently the plan form of elevators has very little bearing on their efficiency. The irregular flaps of the Blériot or Deperdussin, the semi-circular flaps of the Nieuport, "B. E." Vickers, and Bristol, the long continuous flap of the Maurice-Farman, all seem to do their work equally well. The semi-balanced elevators of the Coventry Ordnance biplane strongly suggest the empennage of a performing seal, but they operate effectively, as do the segmental elevators of the Flanders, though they recall the plan view of an invected cheese.

Similarly rudders are of all sorts of shapes, the oblong Deperdussin apparently doing as well as the square Blériot or the tilted oval of the Bristol and Henry Farman.

So, it seems feasible to design a standard and distinctive form for these surfaces which must be worked into the design of all aeroplanes for which War Office orders are desired.

There may be nothing in these ideas; I merely offer them as suggestions, but most people who, like myself, are used to watching machines from the ground—owing to our dislike of committing our necks to the safe-keeping of others and the strange reluctance of proprietors of aeroplanes to lend us machines for experimental purposes on our own account—will agree that it is easier to identify a machine by its elevators and rudders than by anything else.

When it comes to identifying machines for the purposes of the new "Air Laws," the question is more involved. No contravener of regulations is going to assist the "air-guards"—or whatever the sky-gazers of the prohibited areas are to be called—by making himself conspicuous, so despite the denial of certain persons that aerial policemen will ever become common—it is suggested that they will at any rate remain the aristocracy of the police force—one cannot help thinking that if aerial spies acquire the habit of frequenting a certain area a certain number of policemen-pilots will depart from that area in high-speed machines and track lawbreakers to their lairs.—C. G. G.

Workers at the R.A.F.

Mr. T. Reynolds, of the Farnborough Branch of the Amalgamated Society of Engineers, writes:—

"We, the employees of the R.A.F. and members of the Amalgamated Society of Engineers, a responsible trade union, duly note your article in this week's AEROPLANE, and we feel that you are doing us a great injustice by the general tone of your article with reference to the men's conduct at the Royal Aircraft Factory, and on behalf of the above society, we wish you to withdraw your statements."

[The facts were stated on thoroughly reliable evidence, and there is nothing to withdraw. The idleness of the men is due to mismanagement. If there is no work for a man to do he cannot evolve material out of his inner consciousness, and no one can blame a workless man for wasting time as best he can. The British workman is not a saint who would stand idle by his bench in preference to drawing Government money for the time he spends playing pitch and toss. There are numerous excellent workmen at the Royal Aircraft Factory as certain of the work turned out there has shown, but there are too many of them for more than a few to be properly employed. Paying a man for work he does not do is ethically as dishonest as sweating labour.—C. G. G.]

The Mortimer Singer £500 Prize.

(Under the Competition Rules of the Royal Aero Club.)

Mr. A. Mortimer Singer has presented to the Royal Aero Club a sum of £500 for an aviation competition on British machines flown by British subjects.

The following are the chief rules governing the competition:—

1. Both the entrant and pilot must be British subjects.

2. The complete machine, and all its parts, must have been entirely constructed within the British Empire, but this provision shall not be held to apply to raw material.

3. The prize shall go to the entrant.

4. The competition shall be in the first instance open from May 1st until October 31st, 1913, both dates inclusive.

5. The winner shall be the entrant of the aeroplane which shall first accomplish the following series of flights, on a course from a point on the land to a point out at sea not less than five miles distant in a direct line, but the latter point shall not be less than one mile from any shore.

The competitor shall make six out and home flights between the two points, alighting on arrival at each point, coming to rest and remaining until the observer gives the signal to re-ascend.

6. An altitude of at least 750 ft. must be attained on each journey from point to point, and on one occasion during the test an altitude of 1,500 ft. must be reached.

7. A passenger must be carried throughout the flights, and the combined weight of competitor and passenger must be not less than 364 lbs., any deficiency in weight being made up by means of ballast. Pilots or (and) passengers may be changed during the test.

8. Any landing contrivance may be used, but it must form part of the design of the aeroplane and not be merely a temporary or makeshift addition.

9. All oil, fuel and spare parts required must have been carried on the aeroplane from the start of the test.

10. The pilot and passenger will not be permitted to avail themselves of any other person's assistance either for starting, repairs, or other purpose throughout the test.

11. The total duration of the series of flights shall not exceed five hours; and shall take place between sunrise and sunset.

12. Competitors may select their own course, which must be approved by the Royal Aero Club before any flights are made, in this competition.

13. The flights must be observed at each point by the officials appointed by the Royal Aero Club.

14. Entries must be made in writing to the Royal Aero Club seven days prior to any attempt being made, and must be accompanied by a fee of £10, half of which will be refunded to the competitor should the Royal Aero Club decide that a genuine attempt has been made. A competitor must further deposit a sum of £10 on account of expenses which may be incurred by the Club. Any balance not so expended will be refunded.

The entrant must provide suitable accommodation for the observer, and if necessary a mark at the sea point.

15. Should any questions arise at any time after the date of entry, as to whether a competitor has properly filled the above conditions, or should any other question arise in relation to them, the decision of the Royal Aero Club shall be final and without appeal.



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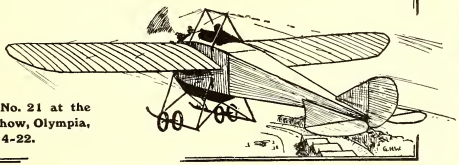
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The Gates of the Air.

BY W. E. de B. WHITTAKER.

When, some twelve or thirteen years ago, Count von Zeppelin's airship first drew public attention to the practical possibilities of flying, enthusiastic writers in the public prints announced that the new science heralded an era of universal Free Trade. The Manchester School was to have its world-wide vindication, and in mutual amity and tradesman-like happiness the nations of the earth were to prepare for the millennium. The ships of the air would know no barriers. No Customs officer could check their coming or going. Thus was the airship to sweep out of existence the economic principles of Bismarck, McKinley, and Chamberlain. But the practical stage of flying has come, and yet no nation has seen fit to alter its system of government.

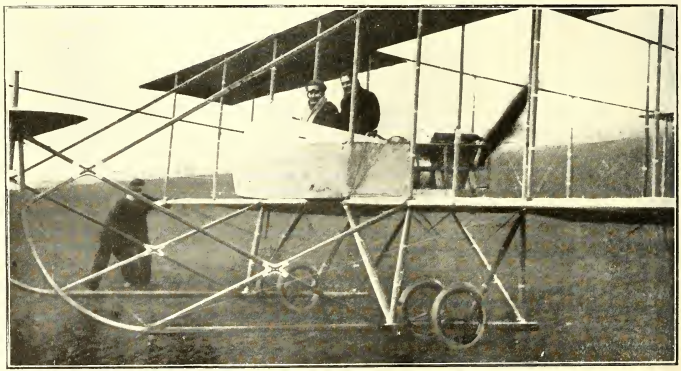
The two great foes of the earth at this moment are France and Germany. Day by day the time draws nearer when France will attempt to avenge the treacheries of 1870. Both nations have great aerial fleets, civil and military. Their common frontier is arbitrary, and has no natural feature to emphasize its existence. Yet it is rare that either aeroplane or dirigible of France or Germany trespasses on the enemy's ground. And this state of affairs is entirely due to the existence of well-understood regulations. A German flying over French soil is a spy, and *vice versa*.

Great Britain opens its doors to the world. The anarchist is as certain of a silent welcome as is the Ambassador of a Great Power. London hides the crimes and the criminals of the world if they so desire it. The label of "Freedom" is insistent and effectually binds every movement of true liberty. But there are limits beyond which national complacency and the patronising principle of the "Open door" may not go. Even so frank a nation as ours has secrets to guard, though we are ostentatious in the doing of it. So far, a high wall has adequately preserved inviolate the visual secrets of the dockyard or the arsenal, but such barriers have lost their use in these days of flying machines. The harassed citizen is not certain that his thoughts even can be kept from public knowledge. But so ludicrously inadequate have our laws been in the recent past that any of our neighbours can offer us the gross insult of sending a semi-official airship on a cruise over our land. And we have been powerless to resent it. Our Embassies may have made plaintive remonstrances, but of what avail are these if there are no laws existent under which to take action?

The Secretary of State for Home Affairs has this week taken steps to abolish the system of anarchy at present reigning in aerial matters. He has, with the approval of the Committee of Imperial Defence, issued a series of regulations under the provisions of the Aerial Navigation Acts, 1911 and 1913. In considerable detail, rules are laid down that foreigners may enter this country by way of the air in a legal and proper manner. The aviator from abroad may now know his rights in this country, as well as those things he may not do.

Exception is taken to these regulations by various critics writing for the daily Press on the ground that there are no means at hand by which they may be enforced. According to them, it is essential that there shall be aerial police who may go into the air to punish any infringement of the laws. Surely the day is far distant on which we shall have dirigible balloons and aeroplanes patrolling ceaselessly along the coasts of Britain. The English have a deep affection for the literal. Diplomacy is a sealed book to them, and subtlety is regarded as a criminal trait. Everything must be stated categorically in "black and white." Else, they cannot understand. There are deeper reasons in the regulations than the mere inspection and codification of foreign aerial visitors.

Until this week the visit of a foreign airship or aeroplane, military or civil, could not be prevented. To-day, should a German dirigible float over Sheerness, the circumstance could be taken as an act of war, and



M. Verrier with Lieut. L'Estrange-Malone, R.N., on the Show Maurice Farman at Hendon, March 8th.

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the usual steps could be taken to avenge it. There are those who, while admitting this, say that such provision could have been made in the course of a few lines, and that the complication of elaborate forms was unnecessary.

How could this be done? A regulation might be issued forbidding foreign aircraft to pass the three-mile limit. This, however, is unnecessarily strict. Yet how else could it be done? Laws are for the guidance of the mass of the people. If it were possible that all thought was common and proceeded on similar lines, then laws are unnecessary; but as individual opinions differ widely, a public code *in great detail* is essential. It is the detail that causes trouble. It is easy to assimilate general principles, but no two people will settle a detailed question in the same way. Therefore, every contingency must be provided for in an adequate manner.

If in the future another trip is made over English strategic points by a so-called privately-owned aircraft from Berlin, an explanation can be demanded through the usual channels. If the excuse is made that a high wind caused the trespass, then it may be asked why no landing was made. The gale could not be quoted as an excuse for that omission, as the aircraft could not return to Germany until the wind dropped. In the case of a voyage which has received the permission of the Home Office, the eighteen hours' notice provides time for enquiry into the status of the passengers.

The ship permitted to enter the country would not be allowed to leave again should any infraction of the regulations take place. A flight, voluntary or involuntary, over a prohibited area would render the aircraft liable to seizure. The aircraft may refuse to land, but that is an act of war, and no foreign Government would refuse to give redress if the flight was made without authority. If the said Government has given authority, then we have armed forces capable of enforcing our rights, and there would be no hesitation.

The authorities have no desire to force any aircraft to land, as any refusal to do so is a clear indication of the intentions of the nationality concerned. We need no aerial police to compel a landing. The necessity for a large aerial fleet in this country is not more or less because of these regulations. If such a fleet is essential already, nothing can make it more necessary.

A further criticism is levelled against the orders. It is said that the list of prohibited areas reveals to the enemy, whoever he may be, all the strategic points of importance in Great Britain. As to the truth of this, those who know, know; and those who do not know ought not to know. Apart from this, a knowledge of the art of war and a close study of the Ordnance map or any chart of sufficient detail leaves little to the imagination. Germany has an Imperial General Staff of great excellence. Its agents are in all parts of the globe, and few things can be kept secret from its chiefs. Success in war does not lie in secrecy, but in efficiency and promptness of action.

As to the restriction of the movements of British civilian aviators, there can be surely no objection. It would be well if those who fly could realise that they have not free right to pass over whatever land they will. Courtesy ought to suggest the proper course to aviators, but if that fails then the law must be called into action.

There should be a cessation of these constant attacks on every movement made by the Government in regard to aviation. The official policy is not all repression. There are many things which affect official action that are not, and cannot be, known to the public. His Majesty's Government need not necessarily be regarded with suspicion. Integrity of purpose is not necessarily absent from the public enactments of Ministers of State.

Naval and Military Aeronautics.

FRANCE.

The escadrille of Farman biplanes, under Lieutenant Aviator Lafargue has been at Tunis during the past ten days, and many flights have been made over the surrounding country.

On March 3rd Lieutenant Aviator Mauger Devarennes flew from Verdun to Buc in two hours and twenty minutes on a Maurice Farman biplane (70-h.p. Renault engine), with a mechanic as passenger. His mean altitude throughout the journey was over 7,000 feet. The week before he flew the same machine from Verdun to Saint Cyr, and on the following Monday flew it back to Verdun. He returned to Verdun by air on March 5th.

On March 3rd Lieutenant Aviator Dietrich, with Sergeant Aviator Constantin and a mechanic, flew the three-seated Deperdussin monoplane from Reims to Nancy. He left at 1 p.m. and arrived at 2.30 p.m.

On March 3rd the Blériot escadrille (six machines) at Belfort received a mobilisation order to concentrate on Camp de Mailly. They left on the following day by way of the air, two only of the pilots finding it necessary to descend en route owing to high wind. They stayed at Brienne-le-Chateau. They were Lieutenant Aviator Boucher, with Sapper Nodot as passenger, and Sapper Blaignan, with Mechanic Leclerc as passenger, both an 80-h.p. Gnome Bleriots. The machines, with these exceptions, and the land transport arrived at Camp de Mailly in safety during the day. The distance is 155 miles, and the wind was very high.

An aerodrome is to be formed at Brienne-le-Chateau with one large hangar fitted with telephone, etc. The population of this place is less than 400, and the formation of a landing ground shows great enthusiasm.—W.

GERMANY.

The Bavarian War Office has engaged Baierlein as an instructor for the military aviation stations, his future work, therefore, being devoted to army matters.

Lieutenant Bedenk, of the 17th Bavarian Infantry Regiment, was severely injured at Munich-Oberschleissheim whilst practising on an Otto biplane. The machine side-slipped, and the unfortunate pilot fractured his skull, besides receiving internal injuries.

Whilst at Kiel the German Emperor paid a visit to the Naval aviation station at Wilhelmshaven, when several ascents were carried out for his delectation. At present there are only two Albatros biplanes there, but a 70-h.p. Euler triplane, and a Curtiss hydro-aeroplane, with an 80-h.p. Curtiss eight-cylinder motor, are to be added shortly.—B.

Recently a series of experiments have been made at Fischhausen, in Prussia, in firing at balloons with ordinary guns and rifles.

It appears that in order to prevent M. Favre from restarting when he was arrested at Vigy-Metz for landing on German ground, the plugs were taken out of his 80-h.p. Gnome motor. The Hanriot aeroplane flown by M. Favre is that in which M. Bielovucie flew the Alps.

The Parseval dirigible, M.1., which was partly destroyed by fire at Tegel on November 10th, is now repaired, and will be placed on service shortly.

The town of Hanover is to become one of the biggest aeronautical stations, and will have a permanent establishment of one aeration company (120 men).

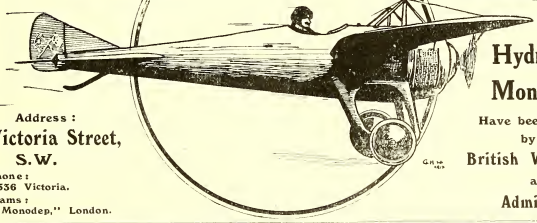
The number of officers and men at Wilhelmshaven is to be doubled on April 1st.—W.

RUSSIA.

On February 25th, at eight in the evening, a dirigible flew over Drinsk, on the Russo-German frontier. During the night of February 26th, two dirigibles were seen over Rylenitsa, a few miles from the former town. These reports have interest

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Mr. T. E. Stanton, D.Sc., M.Inst.C.E. (Superintendent of the Engineering Department of the National Physical Laboratory).
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in view of the rumour that war is imminent between Germany and Russia.

The Ministry of War has under consideration a series of rules for an aeroplane competition to be held during July. All machines entered must be entirely of Russian construction. A vote of 70,000 roubles (15,000 for expenses and 55,000 for prizes) has been asked of the Duma.

An army officer, recently returned from Russia, and who is familiar with Russian political conditions, informs me that at Gatschina, some weeks ago, there were fifty cases of aeroplanes unopened. These new machines are allowed to rot that more may be ordered, and officers of high rank receive large sums of money as commission. During the past year over fifteen hundred aeroplanes have been purchased by the Ministry, about one-third of which have been put into use.—W.

AUSTRIA

The Nobel Dynamite Company have presented the Naval Section of the Austrian War Ministry with a sum of 35,000 kroners for the purchase of an aeroplane.—B.

The report that Austria has acquired a Zeppelin dirigible is untrue. No Zeppelins can be bought by foreign governments. —W.

ITALY.

The annual Budget for military purposes is now under discussion in the Italian Parliament. The general intentions of the Government as to aeronautics are thus evident. The Ministry of Marine wishes to expand its aerial force and organise it as a separate entity. They desire to erect three workshops on the coasts of the Adriatic, one on the Thyrrénian sea, and three more at unstated places. Several dirigible balloons in excess of 12,000 cubic metres capacity are to be built, and fifteen escadrilles of aeroplanes are to be formed. The Ministry of War states that at present the Army has five dirigible balloons, type P (141,259 cubic feet), four of type M (423,777 cubic feet), either on service or in course of construction, and one in excess of 700,000 cubic feet in an experimental state. As to aeroplanes, by the spring there will be twelve escadrilles (each of seven aeroplanes) attached to the respective Army Corps, complete with workshops, hangars, barracks, and personnel (drawn from the air battalion). There are already formed four aviation schools at Aviano, Pordenone, Somma Lombardia and Campa Saint Maurilla, and a School of Theory and Practice for pupils at Turin. All purchases of aeroplanes will be of Italian made machines.—W.

TURKEY.

Lieutenant Aviator Jahnow, of the German Army, who joined the Turkish Air Corps some months ago, was dismissed from that service a few weeks ago for conduct unworthy of an officer and a gentleman.—W.

On March 6th, Enver Bey went up for a reconnoitring trip from San Stefano on a 95-h.p. Mars-Arrow biplane, piloted by Captain Krey, who left Leipzig some weeks ago to enter the Turkish service.

The Turkish Government has placed an order for twelve biplanes with the Leipzig Flugzeugwerke, three to be forwarded immediately. Negotiations for another eighteen aeroplanes are pending.—B.

CHINA.

The Caudron firm is delivering biplanes to the Chinese Government at the rate of two or four a week. Each of these machines is an 80-h.p. two-seater. The following facts concerning their flying powers is of interest. Greatest speed 62 m.p.h.; lowest speed 37 m.p.h.; rate of climb fully loaded 1,600 feet in five minutes.—W.

Foreign Notes.

France.

The Sunday excursion of M. Maurice Farman was this week to Tillières. He left Buc at two o'clock with M. Senoucque as passsenger. On arrival at his destination he inspected a large hangar erected by the proprietor of the Bois-Joli Hotel, had tea, and flew back to Buc, arriving at six o'clock.

On March 4th, M. Maurice Guillaux, on a Clement Bayard monoplane (70-h.p. Gnome), flew from Savigny-sur-Braye to Issy les Moulineaux, a distance of 110 miles in one hour. He left the former place at 5.5 p.m., and reached his destination at 6.5 p.m.

M. Audemars is now flying a Morane-Saulnier monoplane (50-h.p. Gnome engine) at Bâle in Switzerland. He is daily felicitated on his prowess.

Germany.

A sixth form school-boy of Kybnik, in Silesia, has patented a monoplane which experts consider a remarkable improvement. The apparatus is arrow-shaped, and capable of conveying six persons in an aluminium boat built into it. It is said to develop great speed and stability. The foreign patents for a similar design were taken out at the end of last year.

An East Prussian aviation circuit is being arranged for August 14 to 17 to start and end at Koenigsberg in connection with a military cross-country flight

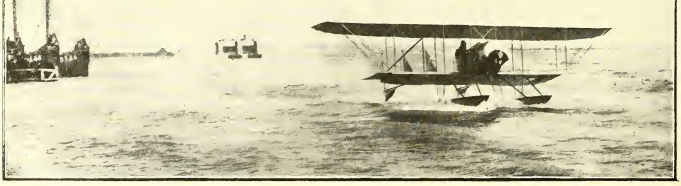
The Aviatik Company in Mulhouse is constructing a series of hydro-aeroplanes which are to be taken to Lake Constance for their trials. A flying base is being erected on the lake in preparation for the hydro-aeroplane meeting this summer. We learn that unparalleled activity is going on at the Habsheim grounds, one of the pilots there, named Schmidt, making seventy ascents on one, and sixty-two on another day with the six non-commissioned officers entrusted to him for instruction.—B.

Cambodia.

M. George Verminck, flying a 50-h.p. Gnome-engined Bleriot monoplane, flew on March 2nd from Saigon to Pnom-Penn in Cambodia, a distance of 240 miles, in four hours. The natives still express the liveliest interest in the strange deeds of the "foreign devils."

U.S.A.

A great scheme has been set on foot by an energetic American journal for a flying-boat reliability cruise round the coasts of Lake Michigan and Lake Huron from Chicago to Detroit. Arrangements are so far advanced that the date of starting has been set for July 8th, and ten machines have already been



The Caudron hydro-biplane (80-h.p. Gnome engine) alighting at Le Crotoy.



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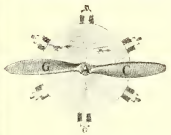
The Maurice Farman classed 3rd in order of merit in the Military Trials was an ordinary standard machine from stock.

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entered, including three Curtiss and three Benoist hydro-aeroplanes. The promoters of the contest expect at least ten more entrants. The affair is stirring up great enthusiasm among the sportsmen concerned. A purse of £6,000 or thereabouts will go to the winner. The course is severe, but not unreasonably so unless abnormal weather conditions reign. The total distance will be something like 800 miles.

The Parseval Company and Great Britain.

Berlin papers report that an agreement has been concluded between the English Government and the Parseval Company at Bitterfield to the effect that the company is to deliver the designs and drawings of the dirigible now in course of construction for England with the aerial cruiser itself. England will then have the right to construct as many airships as it likes for a certain number of years on paying a sum set forth in the agreement for each dirigible to the company. The German Government has already sanctioned this arrangement. The Parseval now in course of construction is 86 metres (280 feet) long with a widest diameter of 15 metres (49 feet) and will cost 550,000 marks (£27,500).—B.

A Lecture in South London.

An interesting lecture on "The Progress of Aviation" was delivered at St. Andrew's Hall, Battersea, by the Rev. W. P. Godwin, on March 5th. He emphasised the fact that Britain was lagging behind. The lecture lasted about two hours, was decidedly interesting, and free from technical terms, and it is to be hoped that it will help to awaken local enthusiasm in aviation.—W. A. B.

Caudron Purchases.

It is interesting to learn that the War Office have ordered two 35-h.p. Caudron biplanes to be delivered this month. These machines are presumably to be used for school work, and their purchase shows that the authorities are at last beginning to realise what has often been pointed out in this paper, namely, the folly of allowing pupils to smash up the high-powered and expensive machines belonging to the fighting squadrons of the Flying Corps. These machines are being built at the Blondeau-Hewlett Works at Clapham, and are to be delivered during the current month.

The Caudron biplane, 80-h.p. Gnome, ordered by the Admiralty, arrived in England on Sunday last, and was promptly arrested for flying over the prohibited area at Dover. The machine was piloted by M. Marty, who was accompanied by Mr. Ramsay, of the W. H. Ewen Aviation Co., Ltd. Presumably, as the machine is Government property, no heavy penalty will be exacted under the new law. The Admiralty has also purchased a second Caudron biplane, 70-h.p. Gnome, namely, the one which Mr. Bell flew from Farnborough to Hendon recently.

The New Curtiss Military Tractor Biplane.

This machine differs greatly from the standard Curtiss biplanes. The wings, though similar in appearance to the standard wings, are each made in a single piece instead of in panels as formerly; they are still further strengthened by the nature of the spars, which are very substantial at the base, and taper towards the wing tips proportionately to their load. In plan the wings are swept back as in the Lohner, Fokker, and new Short machines.

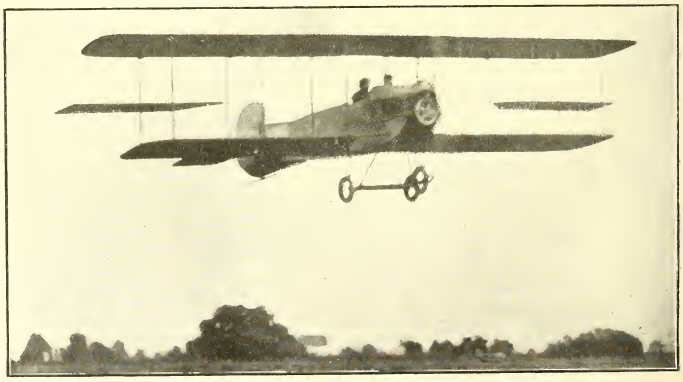
The fuselage is 42 in. wide between the points of attachment of the wings. The distance between wheels is 56 in. The tail surfaces and elevators closely resemble those of the "Flying Boat," and are easily detachable. The longitudinal members of the fuselage—four in number—are tapered rearward, and are wired and braced by a new method requiring no holes. The entire fuselage is covered. Two seats are arranged side by side. The field of view is excellent for a tractor biplane. The engine is placed immediately in front of the aviators, with a 40-gallon tank under the seat.

The propeller is three-bladed, 9 ft. in diameter, geared down, and the engine is fitted with a 22 lb. flywheel. The engine is mounted low, and the centre of gravity is slightly below the centre of lift. The radiator is immediately behind the propeller.

A bonnet similar to that of an automobile is arranged to deflect downwards the cooling air, and to deflect the slipstream upwards and over the aviators' heads. Control is dual.

The three-wheeled chassis has been well tested. The rear wheels are 20 in. behind the centre of gravity so that the tail is off the ground when at rest; the leading wheel is practically under the propeller and so tends to prevent the landing-somersault.

Particular attention has been paid to handiness of assembling and taking down. The top span is 37 ft. 4 in.; the lower plane is slightly shorter. Chord 61 in.; gap 66 in.; length 24 ft.; weight 1050 lbs.; speed 60 m.p.h.

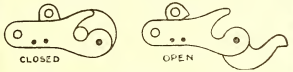


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"Lighter than Air"
FLIGHTS OF FANCY
I have received a copy of "Lighter than Air, or the Aviators Guyed," by Harry Maitland, a delightfully humorous contribution to the literature of aviation. It is packed throughout with fun which will appeal to the lay reader, but will be specially enjoyed by anyone acquainted in the least degree in the world of flight, and I defy any theorist in the Royal Aero Club to discover its centre of gravity. The book is published at a shilling by Messrs. Wm. Dawson & Sons Ltd., and is cheap at the price.
—Mr. Douglas Thorburn in "The Financial World."
"Lighter than Air" may be had from any bookstall, or post free 1s. 2d. from "THE AERO LANE," 166 PICCADILLY, W.

The New Aerial Regulations.

The Home Secretary, under the powers conferred upon him by the Aerial Navigation Acts, 1911 and 1913, has issued the following orders dealing with aircraft visiting Great Britain :—

In pursuance of the powers conferred on me by the Aerial Navigation Acts, 1911 and 1913, I hereby make, for the purposes of the safety and defence of the realm, the following orders :—

I.—Prohibited Areas.

I prohibit the navigation of aircraft of every class and description over the areas described in Schedule I. to these Orders (hereinafter referred to as "prohibited areas").

II.—Portions of the Coastline Prohibited to Aircraft from Abroad.

I prohibit the navigation of aircraft coming from any place outside the United Kingdom over the whole of the coastline of the United Kingdom and the territorial waters adjacent thereto, except such portions of the coastline with the territorial waters adjacent thereto as are described in Schedule II. to these Orders.

III.—Landing Areas for Aircraft from Abroad.

I prescribe the areas mentioned in Schedule III. to these Orders (hereinafter referred to as "prescribed landing areas") to be the areas within which aircraft coming from any place outside the United Kingdom shall land; and I prohibit the navigation of such aircraft over any other part of the United Kingdom until after they have landed in one of the said landing areas, and have complied with the conditions hereinafter set forth.

IV.—The Conditions imposed on Aircraft from Abroad.

I prescribe the following conditions to be complied with by aircraft coming from any place outside the United Kingdom :

The person in charge of an airship, before commencing a voyage to the United Kingdom, shall apply for a clearance to a duly authorised British consular officer in the country from which the voyage is to be commenced, and he shall not enter the United Kingdom until at least forty-eight hours after such consular officer has issued the clearance to him.

In the application (of which three copies must be supplied) he shall state accurately the following particulars :—

Name and registered number (if any) of airship.

Type of airship.

Name, nationality, and place of residence of the owner, of the person in charge, and of every member of the crew, and name, profession, nationality, and place of residence of every passenger (if any).

Nature of cargo (if any).

Approximate time of departure.

Place of departure.

The intended landing-place in the United Kingdom (which must be within one of the prescribed landing areas).

Proposed destination.

Object of voyage.

No change shall be made in the arrangements stated in the application unless either notice has been given to the consular officer before the clearance is issued or his consent in writing is afterwards obtained.

A person in charge of an aeroplane shall, before commencing a voyage to the United Kingdom, send notice to the Home Office stating the proposed landing place, which must be within one of the prescribed landing areas, the approximate time of arrival, and his own name and nationality. The notice, which may be sent by letter or telegram, must be despatched so as to reach the Home Office at least 18 hours before he enters the United Kingdom.

No person in any aircraft entering the United Kingdom shall carry, or allow to be carried, in the aircraft :—

Any goods the importation of which is prohibited by the law relating to Customs.

Any goods chargeable upon importation into the United Kingdom with any duty of Customs, except such small quantities as have been placed on board at the place of departure as being necessary for the use during the voyage of the persons conveyed therein.

Any photographic apparatus, carrier or homing pigeons, explosives or firearms.

Any mails.

The person in charge of any aircraft shall, on landing, report personally to the authorised officer, and in the case of an airship present the clearance to him, and fill in and hand to the authorised officer an arrival report in a form prescribed.

The person in charge of the aircraft shall not continue his voyage until he has obtained a permit from the authorised officer, for which a fee of £3 will be payable in case of an airship and £1 in case of an aeroplane.

He shall, in his subsequent voyage, unless exempted by the terms of the permit, comply with the following conditions :—

In the case of an airship, at least one British representative, approved by the authorised officer, shall be carried in the aircraft.

No photographic or wireless apparatus, carrier or homing pigeons, explosives, or firearms shall be carried.

No mails shall be carried.

The journey shall be effected within the time and by the route specified in the permit.

The pilot shall carry his certificate and shall produce it when required.

The aircraft, before quitting the United Kingdom, shall descend in one of the prescribed landing areas and report to the authorised officer.

If any of the terms of the permit cannot be fulfilled owing to accident, stress of weather, or other unavoidable cause, the aircraft shall come to the ground at the earliest opportunity, and the person in charge shall forthwith report by telegram to the Home Office.

No exemption from these conditions shall be given, except with the previous authority of the Home Office.

The term "authorised officer" means an officer appointed by a Secretary of State for the purpose of this order. Except where the authorised officer is specified in the clearance the person in charge of the aircraft must ascertain by telegraphing to the Home Office or otherwise the name and address of the officer to whom he should report.

V.—Foreign Naval and Military Aircraft.

Foreign naval or military aircraft shall not pass over or land within any part of the United Kingdom or the territorial waters thereof except on the express invitation, or with the express permission previously obtained, of his Majesty's Government. Such aircraft shall enjoy such exemptions from the foregoing orders and be subject to such special conditions as may be specified in the invitation or permission.

VI.—British Naval and Military Aircraft.

The foregoing orders shall not apply to naval or military aircraft belonging to or employed in the service of his Majesty.

VII.—British Aircraft Returning to the United Kingdom.

The conditions prescribed by the foregoing Order No. 4 to be complied with by aircraft coming from places outside the United Kingdom shall not apply to an aircraft which commenced its voyage from and is returning to the United Kingdom, provided :—

The owner, the person in charge, and crew are British subjects.

Notice is given to the Home Office before or immediately after the outward voyage is made.

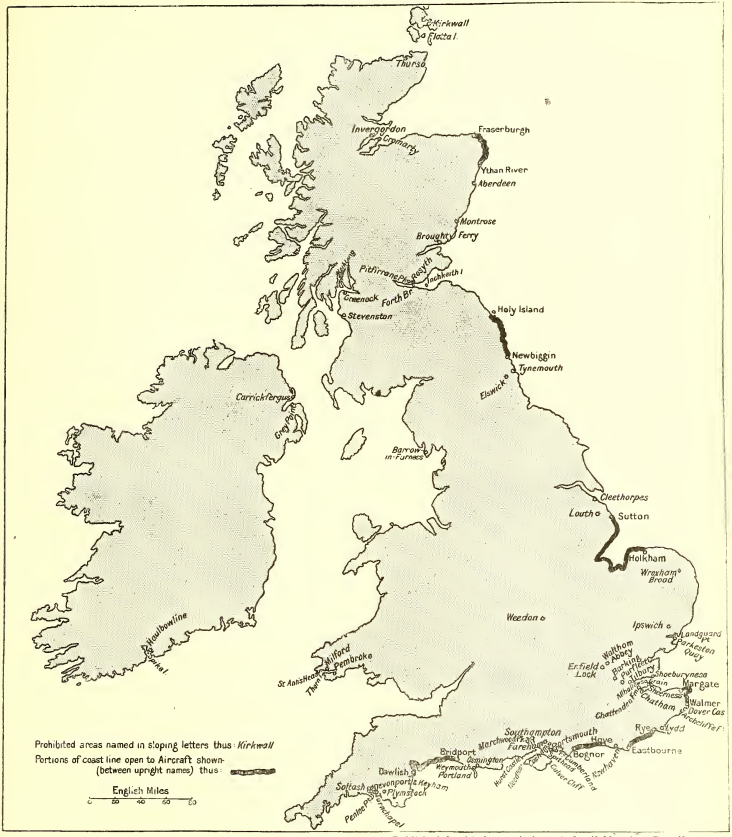
The return voyage is made within 30 days of the departure from the United Kingdom.

At least 18 hours' notice of the return voyage is given to the Home Office, stating the intended landing place (which must be in one of the prescribed landing areas) and the approximate time of arrival.

VIII.—Exemptions.

The Secretary of State may for special reasons grant ex-

The Prohibited Areas.



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emptions from any or all of the foregoing orders to persons recommended for such exemptions by the Admiralty, War Office, or other public department.

IX.—Saving.

Nothing in the foregoing orders shall be construed as conferring on a person navigating an aircraft any right to land in any place as against the owner of the land or other persons interested therein, or as affecting the rights or remedies of any person in respect of any injury to person or property caused by any aircraft.

R. McKENNA,
One of his Majesty's Principal Secretaries of State.

Home Office, Whitehall, March 1, 1913.

THE SCHEDULES.

SCHEDULE I.

Prohibited Areas.

Each of the places named or described in the following list, with the land and territorial water surrounding such place to a distance of three geographical miles in all directions from its boundary, shall be a prohibited area for the purposes of the foregoing order No. I. :—

Kirkwall Town,
Flotta (Orkney Island)
Thurso Town,
Cromarty Ness,
Invergordon Pier,
Aberdeen Wireless Station,
Montrose Town,
Broughty Ferry Castle,
Inchkeith Island,
Rosyth Dockyard,
Pitfirrane Park,
Forth Bridge,
Tynemouth (North Pier Lighthouse),
Elswick Ry. Station,
Cleethorpes Wireless Station,
Louth Ry. Station,
Wroxham Broad (Norfolk),
Weedon Ry. Station (Northamptonshire),
Landguard Pt. Breakwater (Felixstowe),
Parkeston Quay,
Ipswich Ry. Station,
Shoeburyness Church,
Febbing Church,
Tilbury Fort,
Purfleet Ry. Station,
Barking Creek mouth,
Waltham Abbey Ry. Stn.
Enfield Lock Ry. Stn,
Chatham Dockyard,
Teapot Hard,
Chattenden Farm,
Allhallows Church,
Grain Martello Tower,
Sheerness Dockyard,
Dover Castle,
Archcliffe Fort,
Lydd Rly. Station,
Newhaven Station Harbour Jetty,
Fort Cumberland,
Spithead, namely, the space between a line from Lee-on-Solent Pier to Wootton Point and a line from Southsea Castle to Seaview Pier.
Portsmouth Dockyard,
Cosham Rly. Station,
Fareham Railway Station,
Culver Cliff Naval Signal Station,
Needles Lighthouse,
Southampton Docks,
Marchwood Park,
Hurst Castle,
Osmington Church,
Weymouth Pier.
Portland Convict Pier,
Turnchapel Rly. Station,
Plymstock Rly. Station,
Keyham Dockyard,
Devonport Dockyard,
Saltash Railway Bridge.
Penlee Point,
Thorn Island (Milford Haven),
Pembroke Wireless Station,
Old Milford Railway Station,
St. Ann's Head,
Barrow-in-Furness Town Hall,
Stevenston Railway Station,
Greenock Pier,
So much of Loch Long as lies north of a line drawn due east from Knap Point.
Carrickfergus Railway Stn.,
Grey Point,
Strike Island,
Haulbowline Dockyard.

SCHEDULE II.

Portions of the Coastline Not Prohibited to Aircraft from Abroad.

The following portions of the coastline, including in each case the seaward boundary of the places named, are excepted from the prohibition imposed by Order No. II. on aircraft coming from places outside the United Kingdom :—

From Fraserburgh to the Ythan River.
From Holy Island to Newbiggin.
From Sutton (Lincolnshire) to Holkham (Norfolk).
From Stansgate Abbey, on the Blackwater, to Burnham-on-Crouch.
From Margate to Walmer.
From Rye to Eastbourne.
From Hove to Bognor.
From Bridport to Dawlish.

SCHEDULE III.

Prescribed Landing Areas.

The areas bounded towards the sea by the portions of the coastline specified in Schedule II and extending in each case to a distance of five geographical miles inland.

Any person navigating an aircraft in contravention of the foregoing orders is liable on conviction to imprisonment for six months, or to a fine of £200, or to both imprisonment and fine.

Any aircraft which flies or attempts to fly over a prohibited area and any aircraft coming from a place outside the United Kingdom, which flies or attempts to fly over a prohibited portion of the coastline, or fails to comply with the conditions as to landing prescribed in the foregoing Order No. III., is liable to be fired on in accordance with Section 2 of the Aerial Navigation Act, 1913, and the regulations made thereunder.

If any person in any aircraft is anywhere guilty of any act of espionage within the provisions of Section 1 of the Official Secrets Act, 1911, he is liable to seven years' penal servitude.

REGULATIONS.

In pursuance of the powers conferred on me by Section 2 of the Aerial Navigation Act, 1913, I hereby make the following regulations :—

(1) The officer to give the signals and take the action mentioned in the said section shall be a commissioned officer in his Majesty's naval or military forces.

(2) The signals which may be given when an aircraft flies or attempts to fly over any of the prohibited areas or when an aircraft coming from a place outside the United Kingdom flies, or attempts to fly, over any prohibited portion of the coastline, or fails to comply with any of the conditions as to landing prescribed by the orders made by the Secretary of State under the said Act shall be as follows :

By day—three discharges at intervals of not less than ten seconds of a projectile showing smoke on bursting.

By night—three discharges at intervals of not less than ten seconds of a projectile showing red stars or red lights.

(3) On such signal being given the aircraft shall immediately land at the nearest practicable spot, provided that if it be approaching or flying over any prohibited area it shall not in descending advance further towards or into the area.

(4) If an airship is unable to land immediately in response to the signal owing to stress of weather, fog, breakage of machinery, or other unavoidable cause, it shall make the following signal :—

By day—show from the place where they can be most clearly seen from below a red triangular flag together with two black balls superimposed vertically one above the other.

By night—wave a white light, at the same time extinguishing the side lights, and it shall as soon as possible land at the nearest practicable spot in the United Kingdom.

R. McKenna.

Home Office, Whitehall, March 1st, 1913.

The Flying Men of England.

(From the "Evening News.")

Ye flying men of England,
Who fain would guard her air,
And who, if ye had got the chance,
Would make her mistress there,
We hold the purse strings far too tight
For ye to make a show
As ye sweep, on the cheap,
Where the stormy winds do blow,
Where the Gnome is humming loud and long
And the stormy winds do blow.
Britannia needs an air-fleet,
It stands to common sense.
She ought to guard her naked shores,
But think of the expense!
The money that we need is spent
On "rare refreshing fruit,"
But we claim all the same
That we have the right to shoot.
We don't possess the craft or guns,
But we have the right to shoot!
Our visitors by right time
We view with unconcern.
We will not give ye flying men,
The aid for which ye yearn.
Our muddle-headed rulers
Are mean and stingy still.
If ye fly through the sky
Ye have got to foot the bill.
Ye must not only risk your lives,
Ye have got to foot the bill!

C. E. B.

The Royal Aero Club Committee.

By now the voting papers for the Executive Committee of the Royal Aero Club are in the hands of the members, so that they may elect those who are to govern the sport for the next twelve months, and at the time of writing the following names have been proposed :—

*Griffith Brewer.
Ernest C. Bucknall.
*Captain Bertram Dickson.
*John D. Dunville.
*Col. H. C. L. Holden, C.B., F.R.S.
*Prof. A. K. Huntington.
Major F. Lindsay Lloyd.
*F. K. McClean.
*Alec Ogilvie.
*Mervyn O'Gorman.
*C. F. Pollock.
Major B. Baden Powell.

The names of the retiring members of the Committee are indicated by an asterisk.

The Executive Committee attendances during the past year have been as follows :—

Meetings held, 24.

Griffith Brewer	21	J. T. C. Moore-Brabazon	8
Col. J. E. Capper, C.B., R.E.	6	Alec Ogilvie	18
G. B. Cockburn	20	Mervyn O'Gorman	7
Capt. Bertram Dickson	8	C. F. Pollock	24
John Dunville	2	Sir Charles D. Rose, Bart., M.P.	18
Capt. J. D. B. Fulton, R.F.A.	8	Com. C. R. Samson, R.N.	6
Col. H. C. L. Holden, C.B., F.R.S.	15	A. Mortimer Singer	9
Prof. A. K. Huntington	18	Col. The Marquess of Tullibardine, M. V. O., D.S.O., M.P.	2
F. K. McClean	18	R. W. Wallace, K.C.	21

From the first group of names nine have to be chosen, and the selection is by no means an easy one.

It will, of course, be universally accepted that everyone must vote for Colonel Holden and Messrs. McClean and Ogilvie, three of the retiring members who are not only among the hardest workers, but whose knowledge of aviation generally is extensive and practical, the last two being pilots of the best class.

The fact that Messrs. Pollock and Brewer have attended twenty-four and twenty-one of the meetings entitles them almost equally to their seats.

Mr. Ernest Bucknall should certainly be on the Committee, and undoubtedly would have been elected on the last occasion but for the fact that his place was needed for a member with even greater claims to consideration. Mr. Bucknall is one of the clearest thinkers among those who have worked for aviation, and his return to the Committee is greatly to be desired.

Captain Dickson, though he has missed a number of meetings through illness, is a practical aviator and knows as much of aviation on the Continent as does anyone connected with the industry. He also is evidently a desirable man to have on the Committee.

The remaining names are those of Major Lindsay Lloyd, Major Baden Powell, Professor Huntington, and Messrs. Dunville and O'Gorman. From these two names have to be selected, and the general opinion seems to be in favour of Major Lindsay Lloyd and Mr. Dunville.

Major Lloyd is a very hard worker, as his uphill struggle at Brooklands has shown. There is certainly the objection that he is connected with an aerodrome, but anyone who knows him will at once admit that he would never permit that connection to interfere with his decisions as a committeeman, whereas his experience of aviators and their ways may well be most useful. And new blood on the Committee is badly needed.

Mr. Dunville has unfortunately been prevented from attending meetings in this country, but if aviation is to be developed in Ireland it will be well to have a member of the Royal Aero Club Committee in that country. Besides which, as the head of the Irish Aero Club he should be on the Committee of the British Club, unless Ireland wants Home Rule in aviation as well as in ordinary law.

Professor Huntington has been a member of the Committee for some years, and has been a regular attendant, but new ideas are needed, so, perhaps, he will not resent his place being taken by a new member.

Mr. O'Gorman is, of course, chief of the Royal Aircraft Factory, and there are those who are as much opposed to members of Government Departments being on such a Committee as they are opposed to members of the Press being included. It may well be that the Government's attitude may be in direct opposition to that of the Club, especially if the Club does its duty and supports the aeroplane industry, without which it could not exist, and would lose its reason for existing. In such a case the presence of a Government official on the Committee must be embarrassing to the members of the Club. Mr. O'Gorman may do much useful work on technical sub-committees, and one hopes he will be found there rather than on the Executive Committee, which he has not often attended.

Major Baden Powell is best known as an authority on kites, and is head of the Kite and Model Aeroplane Association. Unfortunately for his prospects the majority of members of the Royal Aero Club are more interested in aeroplanes and dirigibles than in kites or models.

Therefore the nine candidates who seem to have the best claim on votes are Colonel Holden, Major Lloyd, Captain Dickson, and Messrs. Brewer, Bucknall, Dunville, McClean, Ogilvie, and Pollock.

The Easter Meeting at Hendon.

From Good Friday, March 21st to Easter Monday, inclusive, the Fourth London Aviation Meeting will be held at Hendon, if the weather permits.

On the Friday a Grand Speed Handicap will be flown, with 4-lap heats and a 6-lap final, the winner receiving a Trophy and a sum of £20, the second prize being £10.

A sixteen mile Cross-country Handicap will also be flown (Hendon to Elstree and back, twice), the prizes being the same as above.

On the Saturday there will be a second Grand Speed Handicap, under the same conditions as before, and for similar prizes. The second event will be an Altitude contest for a Trophy and £10, the second prize being £5.

On Sunday there will be no competitions, but special Exhibition and Passenger flights will be given, as on all other days of the meeting.

On the Monday (Bank Holiday) a Grand Cross-country Handicap of 18 miles will be flown, twice over a triangular course. The winner will receive the Oddenino Trophy and £30, the second prize being £10. The second event being a Grand Speed Handicap, with 6-lap heats and an 8-lap final, for a Trophy and 75 guineas; the second prize being 25 guineas. These two cash prizes have been provided by the proprietor of the "Daily Express."

All types of aeroplanes are eligible for each of these competitions. Entries for all events close at 6 p.m., March 17th. Forms may be obtained on application to the London Aerodrome. A capital list of entries is already assured, and the number of races gives everybody a fair chance of scoring.

It is worthy of note that no one connected with the London Aerodrome has any official position in the running of the meeting, or has anything to say to the handicapping. During the past year by far the greater portion of the prizes has been won by pilots of other firms than the Grahame-White Company, so there is every encouragement for independent aviators to enter.

New Developments in the Hanriot Firm.

M. Alfred Ponnier is now at the head of this firm, while M. Pagny still remains technical director. They are hard at work on the production of a new series of military machines both monoplanes and biplanes. The Hanriot headquarters are now at the old Antoinette sheds at Mourmelon. The fifteen school machines were flown over from Bethény by Favre and Raulet three weeks ago. M. Favre intends to visit England shortly with a Hanriot monoplane (80 h.p. Gnome engine) "type traversée des Alpes." M. Maurice Ducrocq has renewed his contract as British representative of the firm. There are no machines in the world of better construction than the Hanriot, and one wishes the company every success

The Death of Mr. Geoffrey England.

Despite the very great amount of flying that has been done during the months of January and February, there has been a satisfactory freedom from really serious accidents. It was therefore the greater shock to hear of the death of Mr. Geoffrey England at Lark Hill, on Wednesday, March 5th, Mr. England was born at Cobham in October, 1892. For a couple of years past he has been intimately connected with aviation, working with his brother, Gordon England, at the Bristol Company's factory, and at their schools at Brooklands and Salisbury Plain. During 1912 he learned to fly at Salisbury Plain, his certificate being granted on September 17th, 1912. He did practically all his training on monoplanes, and during the past three months developed into a really high-class monoplane pilot, showing great dash and skill. The story of the fatal accident was clearly told at the inquest, which was held on the 6th inst. The following account is taken from the "Morning Post":—

The first witness was the father, Mr. George England, of Walton-on-Thames, who said a letter received from his son on Monday included the following passages:—

"I have just come down from the sheds, as we are going to test four Rumanian 80 horse-power monoplanes. Pixton went up, but found it a jolly sight too bad. The wind was thirty-five. The Prince had the cheek to ask me to do the duration test of an hour and five minutes in a very bad and gusty wind, but he found I was not having any. Last night we had a wire from the firm saying that the tests had to be done by next Thursday, good or bad weather. Apparently they do not mind if we get our necks broken as long as the Prince is satisfied. . . . At any rate we will have another go this evening."

Witness said he had a conversation with his son about a fortnight ago, when he said there was something about these 80 horse-power monoplanes which he did not like, but he could not put his hand on the weak spot. He also mentioned that he found something loose on one of these particular machines, and drew attention to it. He was told to send it back to Filton, the works of the company, and it would be put right; and his reply to that was: "If I had not found this out before going into the air it would never have been possible either for the machine or me to go back to Filton."

M. Henry Jullerot, manager at the Bristol School at Lark Hill, said the machine on which England met his death was one of four 80 horse-power monoplanes of the standard military type, which had been ordered by the Rumanian Government from the British and Colonial Aeroplane Company. Two of them had been tested by Pixton and himself, and England asked to be allowed as a favour to fly this particular machine in the duration test. He started at five minutes past twelve on Wednesday on an hour's duration test. There was a wind of not more than twenty miles velocity and a clear sky. It was not a good day for flying, but seven military machines had flown from Upavon to Larkhill and back. England quickly reached an altitude of 3,000 ft., and still climbing he passed over the Upavon sheds at a height of over 4,000 ft. He then made a sweep round over Bulford, still increasing his height, passing on over Amesbury until at Stonehenge he was nearly 5,000 ft. high. Over Fargo Wood it appeared that he was preparing to come down. He had been flying about 30 minutes. The wind had jumped up to thirty miles an hour. Witness thought the descent seemed a little steeper than usual. When the machine had dropped to a thousand feet the engine was either being switched on and off or was running badly. No one could say for certain. Continuing, M. Jullerot said that England apparently tried to put the nose of the machine into the wind.

The Coroner: "Does that cause any greater strain on the machine?"

M. Jullerot: "It does decidedly."

The Coroner: "What happened then?"

M. Jullerot: "He turned sharply, and was making a cork-screw descent. I suddenly saw the left wing of the machine go down, and the right wing go up to an angle of fifty degrees. I suppose he got a frightful wind shock after the bank. The pilot tried to warp, but I saw the left wing fly off, and the machine fall like a stone. England was an experienced pilot, and had more dash than some more experienced men."

Mr. Greville Smith: "To whom did Mr. England make the request to take this duration test?"

M. Jullerot: "To Pixton and myself." Witness said he did not know if Pixton was there to give evidence.

Mr. Smith: "Was Pixton asked to go up on Wednesday?"

M. Jullerot: "Not by me."

Asked whether Pixton had expressed any opinion about the weather, witness replied that Pixton said it was unsuitable for climbing, but that flying was possible. England was not out taking the climbing test, although he went up to a great altitude, as he always did. On the climbing test a passenger had to be carried. England said he did not think a passenger would like it much. He knew there were some eddies, and he did not want to frighten a pupil. He knew that he would be tossed about.

Answering further questions, M. Jullerot said the letter from Mr. England to his mother surprised him.

Mr. Smith: "Are you aware of any order that whether the weather was good, bad, or indifferent, the tests were to be carried out by Thursday?"—Witness: "I received no such order."

"Do you know of that order being received?"—"Am I bound to answer that question?"

The Coroner: "Yes."—Witness: "Pixton had an order of that kind from the head office."

Mr. Smith: "And that order would have to be obeyed?"—Witness: "We can use our own discretion."

"Was any time limit put upon the delivery of those machines by the Rumanian Government?"—"There was no limit, but certain conditions made it desirable that the tests should be finished by Thursday."

Later the witness said he heard the Prince request Pixton to take the duration flight on Sunday morning. England was standing close by, and the request was probably addressed to both.

Mr. Smith: "If you had had a longer time would you have allowed the test to stand over yesterday?"—"I would decidedly have let it go."

Later, however, M. Jullerot said he had misunderstood that question, but admitted that if there had been a week longer they would probably have waited for a better day. He would have gone up himself for the duration test on Wednesday, but not for the climbing test. No pilot was under any compulsion to make a flight. It was always in his own discretion. He believed it was Mr. Geoffrey England's ambition to attain the British altitude record.

Replying to Mr. Baker, M. Jullerot said that England was under no compulsion to fly on Wednesday. All the pilots used their own discretion, and would not be discharged if they did not carry out the tests on a specified day.

Mr. David Todd, a pupil, who was to have gone up with England, said he was the first to reach the wrecked machine. England was still in his seat, with his legs crushed underneath. A verdict of accidental death was returned.

From the evidence it is shown that the left wing broke in the air. Some of the most experienced aviators in this country saw the accident happen and they all agree on that point, though apparently it is not clear what part broke first. The remains of the machine have been taken to Filton, where an exhaustive examination of every detail is to be made and tests carried out on anything that suggests a possible failure.

On one point in connection with this lamentable affair there is need for comment, namely, the implication in the late Mr. England's letter that he and the other pilots were compelled to fly the tests regardless of weather. In the first place M. Jullerot's evidence makes it clear that he, as manager of the Lark Hill establishment, had no orders from the firm to get the machines through by any specific date, and I gather that what Mr. England took for an order was a request to Mr. Pixton to finish the tests by Thursday if possible, as Prince Cantacuzène was going away. This request was not official, but purely personal. In the second place, Mr. England was

not included in the request, as he was not supposed to be doing the tests, for which Messrs. Jullerot and Pixton had been told off. He flew the machine at his own wish, prompted by a very natural desire to distinguish himself.

Ever since the Bristol Company first started I have been in close touch with various members of the firm, and with practically all its pilots. At times I have felt it my duty to criticise its machines, and have done so. But at no time have I ever known the head office to ask a pilot to fly a machine he did not like. On one or two occasions I have seen one pilot fly a machine, of which another did not approve, and in one notable instance I have known one of their pilots to persist in flying a machine he liked for some time after the head office had sent orders that it was to be sent to Filton for reconstruction, having been condemned by the firm as dangerous.

Any aeroplane firm is entirely in the hands of its pilots in such matters. The most careful calculations may show an aeroplane to be absolutely safe; several experienced aviators may like it as a flying machine; and one or two others may dislike it without being able to say exactly why. Yet these last may continue to fly it, not because they would be discharged if they refused to do so, but because they are afraid of being thought afraid by their fellow-pilots. Thus, all the pilots fly the machine, and neither the designer nor the constructor has reason to believe there is anything wrong till something happens. That something may be a broken warp-wire, a broken rudder, or a broken wing, and the result may be merely a forced landing or a fatal smash. The particular form of accident is beyond human foresight. When it happens, all we can do is learn our lesson from it, and see that it cannot occur again.

In Geoffrey England we have lost a young pilot of great ability and even greater promise, as well as a man of considerable mechanical ability, whose ideas would have been of value to the development of aviation.

His father, Mr. George England, has given three sons to the science. The eldest of the three, Gordon England, is, of course well known. The youngest is at the Bristol works. Mr. England was himself interested in the old Hanriot monoplane school at Brooklands, which was first run by Gordon England, and afterwards by the late E. V. B. Fisher, and at this school a number of excellent pilots, among whom was Mr. Gordon Bell, were trained.

To the father, mother, and brothers of the latest martyr to man's battle with the air, all will offer their sincere sympathy.
—C. G. G.

Concerning Combined Stresses and Test Flights.

As to the direct cause of the fatal accident to Mr. England, and other similar accidents in this country and abroad one cannot hazard an opinion, but I should like to draw the attention of constructors to one line of thought. Is it right that in descending from a flight the pilot should continually switch his engine on and off instead of throttling down? How long would the transmission gear of the best modern car last if one drove on the switch instead of the throttle?

Those who saw Weymann flying in the Gordon-Bennett race at Eastchurch will remember how when he cut the 100-h.p. Gnome in and out the left wing dipped a foot or two every time. The modern 7-cylinder 80-h.p. gives nearly as much power as the old 14-cylinder 100-h.p., therefore the first kick of one of these seven big cylinders must be greater than one of the fourteen could give. In a similar way the first kick of a six- or eight-cylinder stationary engine would probably be greater still, because while the power would be as great it has not to accelerate the mass of metal of a rotary engine.

When that kick comes there is a struggle inside the machine to decide whether the aeroplane shall revolve round the propeller shaft or the propeller shaft shall revolve inside the machine. In the ordinary tractor machine where one starts the propeller contra-clockwise the ultimate strain comes on the left wing, and, according to the method of bracing and whether the bracing is taut or slack, that strain is transmitted through the fuselage and chassis and the fixings of the spar with the fuselage. If there is a slack anywhere the strain comes on that point with a jerk.

Now, to counteract this sudden propeller torque the left wing is warped to meet it. This warp in itself means an extra strain on the wing, both lifting strain and head resistance being increased.

If the machine is circling to the left at the same time there is probably already a warp, and an increased strain on that wing.

Further, the sudden starting of the engine, in addition to the torque, gives a pull forward which again increases the upward and backward stress on the wing.

If all these stresses are complicated by diving into a gust at the same moment the resultant strain must be enormous.

A constructor may build a most carefully designed machine which will stand the switching on and off of the engine, or one which will dive head first into the worst possible gust with safety, or will take full warp and a gust at the same time. A pilot may combine any two of these effects with impunity for months on end, and so a machine may appear perfectly safe so far as any human being can judge, but just once the gust, the full warp, the downward dive, and the jerk of the engine may all happen at the same moment, and then the inevitable happens. Fabric may split, a spar may buckle, a cable, or its fastening, may snap, even the connections of the spars to the fuselage may give way. All that is left is a mass of wreckage from which no incontrovertible evidence can be extracted.

Test Flying.

Flying in bad weather has in itself nothing to do with such accidents. The obvious danger, then, is danger in starting or landing. For military purposes machines must be weather-proof, and so must be flown in the worst weather to prove their capabilities. In weather tests it seems safer to make short flights low down. Especially is this the case with new machines, for even when design and construction are alike perfect, the various fastenings in their construction have to work into place, and "find themselves." After each of these short flights some little adjustment is generally found necessary. Something has settled down and so something else needs tightening up. Only a few days ago I saw one of our best pilots take out a brand new machine and fly for half an hour in a very nasty wind. He never went above 100 feet, but after the first ten minutes the designer of the machine kept on saying, "I wish he would come down. I know something must be slackening out."

Ten flights of ten minutes each in gusty weather, low down where the gusts are worst, and the accompanying landings, will shake a machine into shape and find out its weak spots much better than the continuous flight of an hour, which constitutes nearly all military tests.

A flight of an hour is only a test of the engine, and in a brand new machine, as many are which go through such tests, a danger factor is imported which is quite unnecessary, for if a pilot notices that the control feels queer, or if he sees something working slack at the fiftieth minute he is tempted to hang on rather than have to go to all the trouble over again. Then at the fifty-fifth minute there may be a fatal accident, though no one would ever think of blaming the people who invented the test.

I can only hope that some of our scientists will endeavour to work out the sum of the combined stresses I have suggested, and that those who frame tests will give kindly consideration to the points I have ventured to raise. If they do so, and the result saves even a trivial accident their trouble will be well rewarded.—C. G. G.

The Aeronautical Society.

The Annual General Meeting will be held on Wednesday, March 26th, at 8 p.m., followed at 8.30 p.m. by a lecture, to be followed by a discussion, on "Hydro-Aeroplanes," by Commander C. R. Samson, R.N.

Application forms for the next election of Associate Fellows, which will take place early in April, can now be obtained from the Secretary, and it should be noted that it is not necessary that the applicants should be members of the Society.—Bertram G. Cooper, Sec.

The Royal Aero Club.

At the Committee meeting on the 4th inst., the following aviators' certificates were granted:—434, Second Lieut. R. A. Archer, R.F.A. ((Bristol Biplane, Bristol School, Brooklands); 435, Second Lieut. L. G. Hawker, R.E. (Deperdussin Monoplane, Deperdussin School Hendon); 436, Second Lieut. D. J. McMullen, R.E. (Caudron Biplane, Ewen School, Hendon); 437, Lieut. C. E. H. Rathbone, R.M.L.I. (Avro Biplane, Central Flying School, Upavon).

The Newcastle Aeroplane Fund.

Half the gross receipts of the last flying exhibition by Mr. B. C. Hucks, at the Gosforth aerodrome, Newcastle, was set aside by the proprietors for the purpose of starting a fund with which to buy one or more scouting aeroplanes to present to the War Office. A collection was also made among the spectators for the same fund. The moving spirits of this patriotic enterprise are Mr. Norman Sinclair and Mr. Robert Ellis, while the Lord Mayor of Newcastle has extended his patronage to the undertaking.

Exhibitions at Hendon.

Saturday's sport was led off by a fine demonstration on the part of the elements, during the course of which the wind blew with such vigour that No. 1 pylon, despairing of its further utility, cast itself to the ground. After that, however, conditions eased somewhat.

M. Noël first ventured aloft on the 80-h.p. Henry Farman; it was very pleasant to see M. Noël at Hendon again after his long absence, and it was pleasant also to see the fast Farman once more in the air. A moment's apprehension was caused while the pilot was in the vicinity of the trees at the north end where an aerial disturbance of some sort set him flapping his ailerons in a most alarming manner. The air continued difficult all the afternoon; nevertheless the plucky Mr. Temple essayed a short flight in his little 35-h.p. Caudron, and M. Verrier, in the Show Maurice Farman was up many times, raising the hair of his numerous spectators by banked turns and switchback effects even more fearsome than his usual ones. Among his passengers were Capt. Risk, R.M.L.I., and Lieut. L'Estrange Malone, R.N. Messrs. Manton and Cheeseman also made several flights in the Grahame-White biplane, as did M. Desoutter in the Bleriot.

Sunday provided even worse weather; M. Verrier took out the Maurice Farman with passengers, and M. Noël flew the Henry Farman, but did not carry passengers, as this machine is obviously not so controllable as the Maurice in gusty winds, owing to the higher centre of gravity, heavier loading, and the upsetting effects of sudden jolts on the Gnome carburation. Afterwards M. Renaux, the famous French pilot took out M. Verrier's machine, his first trip on a British-built aeroplane. He took up Mr. Holt Thomas as passenger and appeared delighted with the machine. It requires a very severe day, indeed, to put a stop to flying at Hendon.

The Sunbeam Aviation Engine.

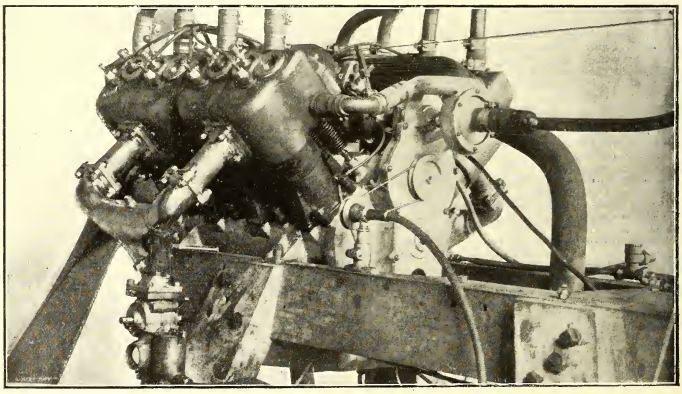
For some time past it has been understood that the Sunbeam Motor Car Company, Ltd., had under test an aeroplane engine designed by Mr. Louis Coatalen, the chief engineer of the firm. The engines recently designed by him, which have done so well in races on the road by winning in the Grand Prix Race and on the track with their many world's records and various races are sufficient to make his entry into aviation motor design one of great importance.

A brief description of this engine has just been issued. It is of eight cylinders (80 by 150 mm.) of cast iron, with copper water jackets and mounted "en V" on an aluminium crank case. The valves are in pockets in the cylinder heads, and are all operated by a centrally placed cam shaft. Owing to the plan form of the engine eight cams actuate the sixteen valves. The weight of the engine complete, but without radiator or water, is 425 lbs., and at 2,500 revolutions per minute the power given is 150 h.p. The propeller is driven through a 2 to 1 reduction gear. Lubrication is by a gear pump working in the bottom of the crank case. The petrol consumption at normal revolutions is 9.24 gallons an hour.

To quote the company's words:—

"The aim of the designer has been to obtain an absolutely reliable engine which is easy to overhaul by any ordinary motor car mechanic. The engine is simply a motor car engine of the touring class without overhead valves or rockers of any description. The cylinders are absolutely duplicates of the three litre Sunbeam engine, which showed such astounding results at the last Dieppe race."

The career of this engine will be watched with interest.—W. E. de B. W.



The New Sunbeam Aero Engine, which develops 150-h.p. at 2,500 r.p.m.

The Week's Work.

MONDAY, March 3rd.

R.F.C., Central Flying School.—Dull, strong gusty, south-westerly wind. No flying.

Brooklands.—At Bristol School, no flying: wind too high.

Salisbury Plain (Bristol School).—Absolute gale.

TUESDAY, March 4th.

R.F.C., Central Flying School.—Very dull, very strong south-westerly gusty wind. No flying.

Brooklands.—At Vickers School, Major Cameron on No. 3 mono, straights in wind up to 20 m.p.h.

At Bristol School, wind still too bad for pupils.

Salisbury Plain (Bristol School).—Wind and rain prevented flying.

WEDNESDAY, March 5th.

R.F.C., Central Flying School.—Moderate south-westerly wind, clear, rather bumpy. On Avro 404, Lieut. Warter 10 mins. to Larkhill, 10 mins. returning and 10 mins. round Aerodrome; Lieut. Littleton 15 mins. to Mile Ball, 8 mins. returning, and 10 mins. round Aerodrome; Lieut. Marks 15 mins., rather heavy landing owing to a nasty gust, breaking propeller. On Avro 406, Air Mechanic Higginbottom 20 mins., to Larkhill and back; Lieut. Holt 20 mins., to Larkhill and back, and 10 mins. Aerodrome; Lieut. Small 20 mins. to Larkhill and back, and 10 mins. Aerodrome; Lieut. Marks 20 mins. over Tidworth; Lieut. Rathborne 10 mins.; Lieut. Read 10 mins.

On Maurice Farman 415, Lieut. Longmore 5 mins. (twice); Engr. Lieut. Randall 25 mins.; Asst. Paymr. Lidderdale 5 mins. On Maurice Farman 425, Lieut. Boyle 12 mins. (twice). Lieut. Conran 25 mins.; Lieut. Marix 13 mins.; Lieut. Ross 10 and 7 mins.; Lieut. Kennedy 14 and 17 mins.; Capt. Salmond 16 mins. On Maurice Farman 427, Lieut. Marix 43 mins. On Maurice Farman 429, Lieut. Longmore with Lieut. Fitzroy 15 mins.

On B.E. 416, Capt. Salmond 5 mins. (twice); Lieut. Soames 15 mins. On B.E. 417, Capt. Salmond 5 and 8 mins; Lieut. Soames 26 mins. On Maurice Farman 426, Lieut. Burroughs 15 mins

On Maurice Farman 418, Major Gerrard with Lieut. Oliver 10 mins., with Lieut. Fitzmaurice 15 mins., with Air Mechanic Power 15 mins., with Air Mechanic Bannister 30 mins.; Capt. Tucker 5 and 15 mins.; Lieut. Bowhill 20 mins.; Lieut. Unwin 25 mins.; Lieut. Glanville 5 mins. On Short 402, Major Gerrard 5 mins; Lieut. Oliver 20 mins.

R.F.C., Farnborough.—Weather very bumpy in gusts 20 to 30 miles. Major Raleigh on Bréguet 210 20 mins. circuits at 1,800 ft.

Hendon.—At W. H. Ewen School, too windy for pupils. Mr. Lewis W. S. Turner on 60 h.p. Caudron.

Brooklands.—At Vickers School, Mr. Barnwell on biplane early, testing extensions fitted. Too windy for pupils.

At Bristol School, no improvement in weather, outdoor work impossible.

Salisbury Plain (Bristol School).—No flying in early part of morning. About noon Mr. Geoffrey England out on monoplane for the flight which ended fatally.

THURSDAY, March 6th.

R.F.C., Central Flying School.—Strong south-westerly wind, very bumpy, dull. On Avro 406, Lieut. Rathborne 15 mins.; Lieut. Read 15 mins.

On Maurice Farman 411, Lieut. Longmore with Capt. Vivian 20 mins. On Maurice Farman 425, Air Mechanic Collis 19 mins.; Capt. Vivian 20 mins.; Sergt. Street 6 mins.

On B.E. 417, Capt. Salmond 12 mins.

R.F.C., Farnborough.—Weather still very bumpy in gusts 20 to 30 m.p.h. Major Raleigh on Bréguet 210, 19 min. circuits at 3,500 ft.

Hendon.—At Deperdussin School, Mr. E. B. Bauman (new pupil) joined school and had first lesson on No. 2 taxi.

FRIDAY, March 7th.

R.F.C., Farnborough.—Mr. "Vitry" arrived on B.3 machine from Hendon, smashing it on landing, escaping with slight injuries to his right eye and one ankle. Mr. Brock on 100-h.p. Deperdussin doing test circuits at good height.

R.F.C., Central Flying School.—Strong south-westerly wind and very bumpy in forenoon, clear. Almost calm in afternoon, then very dull. On Avro 406, Lieut. Holt 25 mins., over Tidworth; Lieut. Marks 20 mins., Lieut. Warter 20 mins. and 10, Lieut. Rathborne 30 mins., all flights over Tidworth; Lieut. Littleton 10 mins. (twice); Lieut. Read 15 mins.; Air Mechanic Higginbottom with Ldg. Seaman Marchant 30 mins., with Air Mechanic Butcher 15 mins.

On Maurice Farman 411, Lieut Longmore 10 mins. alone, with Sergt. Kemper 25 mins.; Sergt. Stafford 20 and 25 mins., and Sergt. Street 25 and 35 mins., these two Sergts. for their R.Ae.C. Certificates, both doing them in good style, especially Sergt. Stafford, who made exceedingly good landings.

On Maurice Farman 425, Capt. Salmond 10 mins.; Lieut. Boyle 10 mins.; Capt. Vivian 13 and 25 mins; Sergt. Stafford 16 mins.; Air Mechanic McNamara 19 mins.

On Maurice Farman 427, Lieut. Ross 13 mins.; Lieut. Kennedy 13 mins.; Lieut. Marix 12 mins.; Lieut. Conran 24 mins.; Lieut. Boyle 19 mins.; Lieut. Harvey 22 mins.; Air Mechanic Collis with Air Mechanic Gardner over Tidworth 25 mins. On Maurice Farman 426, Capt. Salmond with Petty Officer Grady 30 mins.; Engr. Lieut. Randall 30 mins. On Maurice Farman 418, Capt. Tucker 25 mins. (twice); Lieut. Bowhill 30 mins.; Lieut. Roupell 20 mins.; Lieut. Unwin 35 mins.; Lieut. Glanville 25 mins.

On B.E. 416, Capt. Salmond 5 mins. alone, with Lieut. Dawes 30 mins., with Lieut. Thompson 20 mins., with Petty Officer Grady 25 mins.; Capt. Macdonnell 18 mins. On B.E. 417, Lieut. Soames 30 mins.

Hendon.—At Grahame-White School, during practically whole week weather so bad that school work impossible.



Captain Risk, R.M.L.I. (on right) and Lieut. Wildman-Lushington, R.M.A., of the Royal Flying Corps, take a holiday at Hendon.

On Friday, Mr. Louis Noel, welcomed back from Switzerland, out on 80-h.p. Farman, followed later by Mr. Manton on No. 5.

At W. H. Ewen School, no school work. Mr. Lewis W. S. Turner several flights on 60-h.p. Caudron.

At Deperdussin School. At 11.45 a.m. Mr. Gordon Bell flew with passenger to Eastchurch on new 80-h.p. Deperdussin to hand over to Admiralty. Took 40 mins. over journey. Very good performance, considering wind against him most of way.

Mr. Spratt and Mr. Whitehouse, circuits on No. 4 machine in evening.

At Blériot School. During off-day No. 5 had 50-h.p. Gnome taken down for cleaning ready for superior brevet pupils. M. Gandillon practically ready, and Mr. Clappen going for his.

Lieut. Loftus Bryan, straights on No. 1, and making excellent progress. Mr. Williams rolling.

Brooklands.—At Vickers School, Mr. Barnwell flying biplane before breakfast, but too windy for pupils, who had wisely stayed in bed. In afternoon, Mr. Barnwell out on Farman for test flight, then with Mr. Knight (new pupil), then with Mr. Waterfall (another new pupil). Mr. Knight then on No. 3 mono taxying, and broke propeller. Mr. Barnwell then, with Mr. Waterfall and Mr. Knight, straights on biplane. Mr. Knight (other pilot) then took Mr. Waterfall, and his namesake, Mr. Knight.

At Bristol School, in afternoon Mr. Bendall, with Lieut. Morgan. Lieuts. Robertson-Dobie and Blatherwick alone.

Salisbury Plain (Bristol School).—No flying until evening. M. Jullerot alone on 80-h.p. mono., then took Lieuts. Griffiths and Broadribb on biplane till dark.

SATURDAY, March 8th.

R.F.C., Central Flying School.—Clear, bright sunshine. Freshing north-westerly wind, too strong and bumpy for flying after breakfast. On Avro 404, Lieut. Read 15 and 8 mins. (twice); Lieut. Littledon 10 mins. On Avro 406, Major Fulton 5 mins.; Lieut. Holt 10 mins., owing to a very bad gust and a mistake in landing, machine rather badly damaged, fortunately pilot unhurt.

On Maurice Farman 411, Air Mechanic McNamara 15 mins.; Lieut. Boyle 10 mins. On Maurice Farman 425, Capt. Vivian 10 mins. On Maurice Farman 427, Lieut. Kennedy 98 mins. very good flight over Swindon and district. On Maurice Farman 418, Lieut. Bowhill 40 mins. On Maurice Farman 426, Engr. Lieut. Randall 50 mins.

On B.E. 416, Capt. Salmond with Sergt. Rigby 30 mins.

On Short 402, Major Gerrard with Sergt. Vagg 5 mins, with Lieut. Fitzmaurice 7 mins.

Hendon.—At Grahame-White School, at 7.30 a.m. Mr. Manton on No. 7, Mr. Cheeseman on No. 5, and in afternoon, Messrs. Dessoutter, Louis Noel, Manton and Cheeseman, all doing excellent exhibitions.

W. H. Ewen School, pupils out 6.50 a.m. Mr. Lewis W. S. Turner test flight. Lieut. Bayly circuits and figures of 8 on 35 h.p. Caudron. M. Baumann on 28 h.p. Caudron. Lieut. Usburne, R.N., and Messrs. Stewart and Toor straights. Mr. Lewis W. S. Turner on 60 h.p. Caudron.

At Deperdussin School, Lieut. Hordern figure of eight at 7 a.m. Then went for brevet, passing in good style keeping steadily at 200 ft. Landing very good. Second half in very bumpy wind.

At Blériot School, M. R. Desoutter straights.

At Blackburn School, Mr. Blackburn testing; Mr. Spink circuits.

At Aircraft Co., M. Verrier out with passengers, including officers of R.F.C.

Brooklands.—At Vickers School, Mr. Barnwell early with Messrs. Waterfall and Knight giving place when nearly frozen to Mr. (pilot) Knight, who took pupils till in turn down to zero. Mr. Barnwell out again till too bumpy for pupils.

At Bristol School Mr. Bendall out early with Lieut. Morgan. Lieuts. Robertson-Dobie and Blatherwick alone.

SUNDAY, March 8th.

Hendon.—At Grahame-White School, Mr. Noel on 80 Farman.

At W. H Ewen School pupils out at 7 a.m., Mr. Lewis W. S. Turner test flight on 35 h.p. Caudron. Lieut. Bayly passed brevet at 400 ft. Immediately afterwards Mr. Lawford also passed on same machine. M. Baumann on 35 h.p.

At Blackburn School, test by Mr. A. Blackburn at 7.45 a.m. Mr. Spink practising.

At Aircraft Co., M. Verrier and then M. Renaux up with passengers.

Brooklands.—At Bristol School, Mr. Merriam alone and with Lieuts. Duncan, Morgan, and Picton-Warlow. Lieut. Blatherwick fine circuits alone. Mr. Merriam a trial in afternoon, wind terribly gusty.

Mr. Hamel did a couple of exhibition flights in afternoon on Blériot, but wind too bad even for him, and came down admitting to feeling air-sick.

M. Marty and the New Laws.

On account of the severe mid-day gusts, some fear was felt at Hendon on Saturday afternon for the safety of M. Marty and his passenger, Mr. A. Ramsay (of the W. H. Ewen Aviation Company, Ltd.), who were known to have started from Paris earlier in the day, and to have reached Crotoy at 11.15. The machine was a new 80-h.p. Caudron biplane, recently bought by the Admiralty, and the destination was Hendon. It appears, however, that fog compelled the aviators to remain at Crotoy until Sunday afternoon at 4 o'clock when a fresh start was made. The channel was crossed in 35 minutes between Cape Grisnez and Dover—a prohibited area—and a landing was made at Adisham, near Canterbury

No smoke-bombs were fired, but the Dover coastguards had signalled the aeroplane's approach, and so on landing M. Marty was promptly accosted by the local police and compelled to divulge not only his own name, but also that of his passenger, as well as all particulars of the flight. They were then allowed to proceed, and flew to Bekesbourne—still nearer Canterbury—where engine trouble brought them to earth again.

M. Vitry's Accident.

After flying from Hendon to Farnborough in a 90-h.p. Bréguet biplane belonging to the R.F.C. (which had been at the Bréguet works for repair), M. Vitry came to grief at the end of his iourney. In the course of his final glide the machine omitted to flatten out as it reached the ground. M. Vitry escaped with a damaged eye and a sprained ankle.

The Admiralty Borel.

On March 11th, M. Chemet took the Borel hydro-monoplane (80-h.p. Gnome engine) through its acceptance trials for the Admiralty. The trials took place off the Isle of Grain, and Lieutenant Seddon, R.N., was the passenger throughout. The wind varied in strength from 25 to 35 miles an hour. After the hour's duration flight was finished the altitude test with full load was carried out. Lieutenant L'Estrange-Malone, R.N., was present on behalf of the Admiralty. We are informed by Messrs. Harry DelaCombe and Pierre Maréchal, the British representatives of the Borel firm, that another 80-h.p. monoplane of the same type as the first has now been ordered and is to be delivered within ten days.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.
For the convenience of Advertisers, replies can be received at the office of The Aeroplane, 166, Piccadilly, W.
Special PREPAID Rate—18 words **1/6**; Situations Wanted ONLY—18 words **1/-**. 1d. per word after.

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"How to take out patents in England and abroad." (By Arthur E. Edwards, F.C.I.P.A.) 2s. post free.—Arthur Edwards and Co., Ltd., Patent Agents and Consulting Engineers, Chancery Lane Station Chambers, W.C. 'Phone 4536 Holborn.

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EASTBOURNE AVIATION CO., LTD.—Hydro-biplane, biplane and monoplane tuition. One of the best equipped schools in England. Bleriot, Bristol, Farman and Somner machines. Exhibition and Passenger Flights.—For terms and full particulars, apply AERODROME, Eastbourne.

THE TEMPLE SCHOOL OF FLYING.—Tuition on two types of machine—Blériot Pattern Monoplanes and Caudron Biplane. Fees, including breakages and insurance, £58. Special terms for first ten pupils and officers.—TEMPLE, AERODROME, HENDON.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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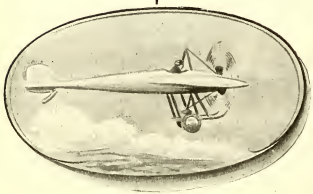
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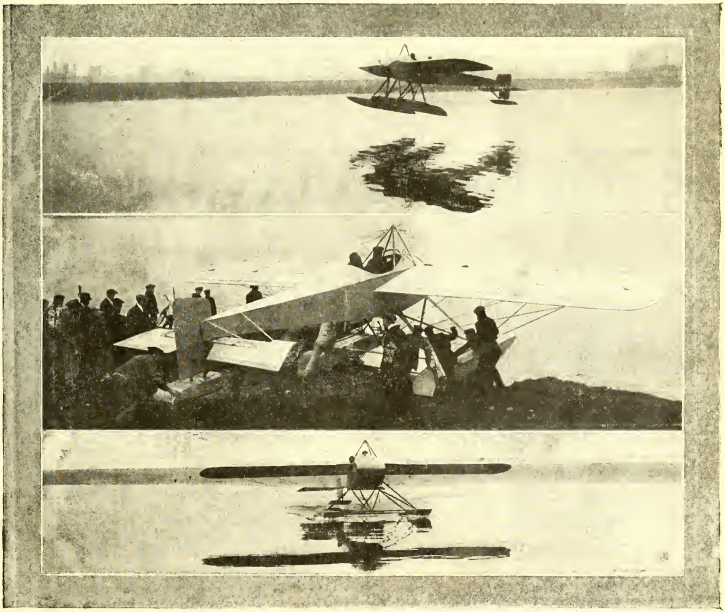
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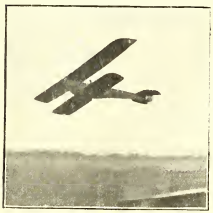
Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, MARCH 20, 1913. No. 12.

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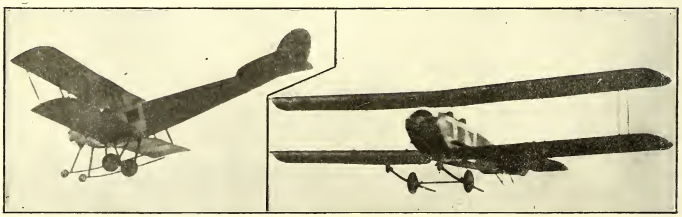
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Britain's Aerial Weakness.

The Army Estimates are now public property, and it is at once evident that the Secretary of State for War has betrayed his trust. So far from putting our aerial defences on a sound footing during the past year, he has actually left them in a worse relative condition than they were a year ago, and, instead of providing for their adequate strengthening in the coming year, he has starved their finances worse than ever.

Last year the total sum allotted was £340,000, of which £90,000 was spent on a land deal, which an officer of experience scientifically described as a "ramp," and £100,000 went to the Royal Aircraft Factory, leaving £150,000 for all other purposes. This year the total sum is £501,000, but of this £234,000 goes to Colonel Seely's pets at the R.A.F., leaving only £267,000 for all other purposes. When one considers the greatly increased personnel of the Military Wing, R.F.C., it is evident that there is less money than last year for the equipment of the corps itself. That is to say, the Royal Aircraft Factory has over double the amount of money to waste that it had last year, and the honest aeroplane constructor is made to suffer. There is the faint hope that the bulk of this sum may be intended for the construction of a large experimental dirigible, though it looks as if acroplanes were to be built in large quantities in any case.

Colonel Seely was once a Conservative. He has now reached high office as a Liberal. His forcing on the country of this new Government factory is the first evident sign of his further progress towards rampant Socialism. The Aeroplane is not a political paper, and I am prepared to admit the good in any political creed, but I think even the most advanced Socialist will agree that it is not in the public interest to pour out the taxpayers' money for the benefit of a select gang who have already shown their incompetence both as producers and as judges of the products of others.

However, neither Colonel Seely nor the Royal Aircraft Factory are all-powerful, and by a well-organised educational campaign in the public Press much may be done to force the Government to place the military portion of our aerial defences on a proper footing.

The Naval Wing may well be left to look after itself. The Air Department at the Admiralty has done more in a month than War Office has done in a year. The Navy will make mistakes. Naval methods always do lead to mistakes, but they also provide an excellent way out to ultimate success.

The awakening of the country to the need for aerial defence continues apace, and one hopes that the memorial to the Government issued by the Aerial Committee of the Navy League will have some effect, if not in official circles, where it seems too late, at any rate on the country at large. It may, perhaps, be well at this moment to elaborate somewhat on the ideas contained in this memorial, which of necessity had to be as brief as possible.

Our Aerial "Strength."

The first point brought forward was that the aeroplane squadrons of the Military Wing, Royal Flying Corps, should be brought immediately to the full strength of the establishment, with full transport and equipment. This must assuredly be the first step in placing the military side of our aerial defences on a proper footing. At the present moment the actual strength of the three squadrons formed on paper is not more than eleven machines. Colonel Seely, or his advisers, endeavoured, as might be expected, to mislead the public on this point when replying to Mr. Joynson-Hicks last Thursday, but the truth is that at the moment there are two B.E.'s and three Maurice Farmans at Montrose (No. 2 Squadron); two Maurice Farmans at Lark Hill (No. 3 Squadron), their B.E. having been smashed on Thursday; and perhaps four biplanes—B.E.s, Brégucts, or Codys—at Farnborough (No. 4 Squadron). The school machines at the Central Flying School may technically belong to the Military Wing, but they do not belong to any of the three aeroplane squadrons, and I believe I am correct in stating that they are paid for out of the Central Flying School's own bank account.

These three squadrons should have at least forty-five machines in flying order, instead of ten or eleven, the forty-five consisting of twelve machines per squadron, and one in reserve to every four, or fifteen machines per squadron. So it will be seen that a number of machines must be bought to bring the existing paper squadrons up to strength. Although they are still seventy-five per cent. under strength, I gather that two other squadrons are to be formed on paper. One is to be stationed somewhere about Rye, on the South Coast. It will, of course, look well to say that we have already established military aerodromes at Montrose and Rye, and Colonel Seely will doubtless expatiate on his great work at some future function where he is the guest of the evening. But well as this may do as "eye wash," it is not the real thing, and a few machines in a ploughed field at Montrose or in a salt marsh at Rye do not constitute a military air station in being.

Full Strength.

The "full strength of the establishment" means seven aeroplane squadrons *en état de partir*, with eighty-four aeroplanes ready to put to air at the first turn of the propeller, with twenty-one other aeroplanes in cases ready to be assembled within an hour, and with full transport and repair wagons for each squadron. Nothing less is allowable.

As a matter of fact, even "full strength," as at present laid down on paper, is quite inadequate on active service, for twenty-five per cent. of reserve machines is insufficient. At least two machines per pilot are needed to allow for wastage, so that 168 aeroplanes should be bought, wherewith to equip the seven squadrons for which allowance is now made.

Expansion.

The Navy League memorial further asks that, in order to provide for the expansion of the Royal Flying Corps, it is necessary to establish the aeroplane industry on a sound footing, and that this can only be

done by assuring a continuity of orders to constructors. It is obvious that provision must be made for expansion of the R.F.C. The seven squadrons, even at full strength, will be inadequate for the Expeditionary Force, and, if we act with France in a big war, the French will not have enough spare pilots and machines to supply the Army Corps which we are to lend them with substitutes for the air scouts we omit to provide. Therefore the R.F.C. must be expanded for this purpose alone.

After that we have to consider properly trained squadrons for home defence to operate with the Special Reserve battalions and the Territorial Army—though I sincerely hope we shall have "compulsory volunteering" long before we have any need to use these supplementary squadrons of the R.F.C. on active service in this country. It seems quite probable that, if the Territorial Army continues to exist for a few years longer, some provision will have to be made for Territorial squadrons of the R.F.C., in which case a large number of aeroplanes would be needed for this purpose alone. Also, as even Colonel Seely admitted, the R.F.C. may have to be established on a larger scale than would be needed if we adopted the proportions to the standing army which prevail on the Continent for, as has been pointed out in this paper many times, we need a Flying Corps proportionate to our wealth and population rather than to our Navy and Army.

Continuity of Orders.

In order to provide for this expansion, continuity of orders must be assured to the makers of aeroplanes. There must be an end to this system of ordering three or four machines, and then letting a constructor's works stand idle for five months before another order is placed. If machines prove satisfactory, others must be ordered for delivery on specified dates. If they are not satisfactory, the maker should be told so at once, even if the reason for dissatisfaction is not disclosed. Makers must not be allowed to fritter away capital and energy as they have been during the past disastrous twelve months.

As the organisation of the R.F.C. on a bigger scale must necessarily be a lengthy business, it might at least be possible to place orders within the next month or two for a number of machines of approved type and detail design, to be delivered during the next eight or ten months, the total number ordered being in excess of the 108 needed for the present establishment of the R.F.C. (Military Wing), for it must be evident that before this time next year a far greater number will be needed, and, if they are to be properly built and not rushed through in a hurry, with resultant hasty work and danger to their users, the makers must know here and now what is required of them for some months ahead. Only by such a proceeding can adequate capital, proper factory organisation, and the right class of workman be secured.

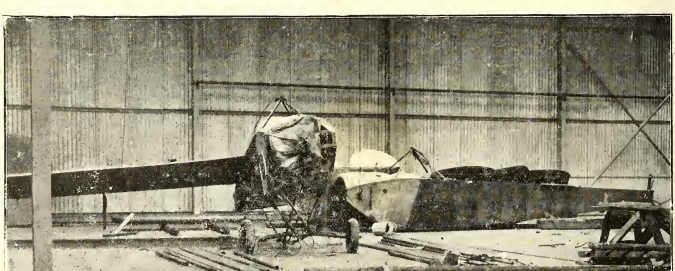
Experimental Types.

It is also recommended in the memorial that a definite sum be allotted for the purchase of experimental machines. This is a wise demand, for only in this way can progress be made.

The natural desire of the Army is to standardise to the utmost degree. Standardisation simplifies transport, minimises the number of spares to be carried, and, what is equally important, makes it possible for any pilot to fly any machine. It also abolishes the danger of forcing pilots to fly machines of a strange type. As I have often declared, each pilot should be perfectly familiar with one machine, and he should fly no other. Does anyone think that such pilots as Messrs. Hamel and Verrier would be the fliers they are if they were always flying different types? On the other hand, standardisation blocks progress. The standard type need not ever be the best type, for it depends on official selection, and for many years it cannot be the best type, because we are still far from the ultimate stage of development. The attempt in certain quarters to secure the standardisation of the B.E. type is in itself an excellent argument against standardisation.

The recent purchases of a variety of types by the Navy shows how the Air Department at the Admiralty realises the value of experimenting to gain wider knowledge, but, as the Naval wing is not faced with the problem of road transport, it can necessarily allow itself greater latitude, and, as the ultimate type of Naval aeroplane is even further away than the land-going machine, there is more immediate need for many experiments.

The most desirable system appears to be that each squadron of the Military Wing should be equipped with aeroplanes of one type. Just as in the French Army there are full "escadrilles" of Blériots, others which are all Deperdussins, others all Borels, and others all Farmans, so we might have certain squadrons all Bristols, others all Vickers, others all Avros,



The above machines are two of the monoplanes alleged by Colonel Seely on January 22nd and March 13th to be in flying order. This photograph was taken in the Royal Air craft Factory shortly before the second statement. Will the Official Secrets Act be brought into action?

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others all Sopwiths, others all Shorts, and so on. Thus any officer of a squadron could fly any other machine in his squadron with the safety born of familiarity. Then, apart from these, there should be, at headquarters or on Salisbury Plain, certain of the most experienced and reliable pilots, whose duty it would be to fly the "experimental" machines. These machines would not be literally experimental, for there would be no doubt about their ability to fly or their safety. They would already have passed the standard military tests before purchase. But they would be experimental in that, being new types, it would be necessary to carry out experiments as to their superiority for military purposes to the machines already allotted to the various squadrons.

When one or two such machines had demonstrated their value, a number could be purchased and handed over as a complete supply of remounts to whichever squadron was running short of machines, the remaining machines of that squadron being taken into reserve for any squadron similarly mounted.

Engines.

The memorial also draws attention to the need for encouragement to makers of British engines. Engines take longer to produce than aeroplanes do, and in their experimental stages may even cost more. There are fewer British firms making engines than there are making aeroplanes, and hitherto these firms have received, if possible, less encouragement in official quarters than have aeroplane makers. A few skilful workmen in a large shed can make an aeroplane as good as any in the world. To build a good engine, expensive machine-tools are needed. Therefore, before it is worth an engineer's while to start building an engine, he must see at least a fair chance of an order for, say, fifty or a hundred engines exactly like the one which is successful. Only so can the best brains and equipment be brought into the business.

The simple and obvious way to secure a supply of British engines seems to be to set a series of tests, and offer a definite order as a prize for the engine which, being built to a certain specification as to dimensions and weight for horse-power with fuel for a stated period, does best in those tests. As an additional inducement, a cash prize might be offered, to cover the cost of experiments, but the essential thing is the order for quantities after the competition is over. Such a competition has been advocated over and over again in this paper, but apparently the benefits are so obvious as to give rise to suspicions as to its efficacy.

Even foreign firms are dissatisfied with our official methods, for I know that two of the leading foreign engine makers would have set up works in this country if they could have been assured of a continuity of orders, and doubtless such a competition as I suggest would be sufficient inducement to them to do so.

Incidentally, if such a competition should ever be instituted, it might be well to specify that even the raw material must be British, for we should look rather foolish in time of war if we had to depend on Sweden or Belgium for cylinder castings, or on France for piston-rings. The metal itself might be of foreign origin, for presumably there would always be a reserve in hand, but certainly the casting, drawing, or spinning of the metal should be done in this country.

Dirigibles.

Provision for the construction of airships and stations, as the nucleus of a fleet of dirigibles, is also advocated in the memorial. This opens up an enormous subject. Airships we must have some day, and airships we cannot have this year, for no one can produce anything except experiments inside twelve months. Is it better, therefore, to go to two or three big firms and order from each a dirigible of the largest size, subject to its passing certain tests, or should we simply offer to buy any dirigible which satisfies certain requirements as to speed and weight-lifting capacity? Personally, I incline to the latter course, because it opens the way to a clever man being able to obtain financial backing which would enable him to produce a really original machine, whereas the same man, no matter how good his ideas might be, would have less chance of being taken on by a big firm, who probably know nothing about his ability, and even if he were taken on he would probably be faced by the veiled hostility of the present employees, who would resent his appointment over them, and might deliberately spoil his work. It would probably be easier for such a man to produce the right ship by starting his own works and being master there, or by ordering the work to be done on his behalf by a big firm. Therefore, I advocate leaving the orders open to competition by result, each competitor being sure of his order if he "makes good."

Airship Stations.

Airship stations also call for big money. Whether one builds a fixed shed above ground and lays electric railways all round on which the ship is run into the shed, anchored on motor-trucks; whether one digs a vast hole in the ground and lets the ship out through a colossal trap-door of a roof; or whether one makes the whole shed swivel round on a floating floor, or on rails, the cost is going to run into tens of thousands of pounds. Still, the money has to be spent some time, and we may as well do it now.

When Brunel built the Great Western Railway he was ordered to lay a single-track road from Plymouth to Penzance, but, seeing ahead, he bored all his tunnels for a double road, and his foresight has been justified within the last few years. So, when we build our airship sheds, we must build them big enough for two ships side by side, on the lines of what the euphonious German calls a "doppelluftschiffhalle." If we start with three only, at, say, the Medway, Cleethorpes, and North Berwick, our experimental airships can do reasonable voyages, and if one arrives where another already is it can be accommodated at once. And they must be big enough for bigger ships than any now existing, or be designed for greater expansion.

We do not want a repetition of the Farnborough fiasco, where £10,000 was spent in 1911 in raising the roof of an almost new shed some ten feet to accommodate a machine which only occupied it for a few hours. Incidentally, that shed is now practically useless, except for the little experimental balloons we now have. It is yards higher than any Zeppelin requires, but it cannot be lengthened one way without pushing part of the Royal Aircraft Factory down, and in the other direction an extension would bring it too close to the new aeroplane sheds.

The other big shed was, I hear, nearly as bad a fiasco, for the contractor was told to get the walls covered while the officials made up their minds what height they required. Then the contractor was told to cover the roof, and when it was partly done he was told to raise the walls again: This method of construction, I am told, added some thousands to the cost of the shed.

The "portable" dirigible shed was also quite a financial failure. It is simply a cave of the winds where a continual sandstorm rages, and its roof is not water-tight. It takes a month to take down and six weeks to put up, and when ready for transport it makes fifty traction-engine train-loads of material. It would be interesting to know who was responsible for its purchase, and what it cost. At any rate, mistakes of these kinds must be avoided when we are building our airship stations.

The Army and Airships.

Airships naturally suggest the question as to whether No. 1 (Airship) Squadron, R.F.C., is to continue to exist as such, or to become an aeroplane

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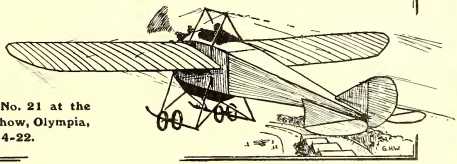
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squadron. There seems to be a general idea that airships are more a matter for sailors than for soldiers. This may be true, but undoubtedly the Army needs airships, if only for night work on active service. And it is possible that small collapsible ships, able to do forty to forty-five miles an hour, night, for this work, be preferable to ships of Zeppelin size.

If the Navy took over all dirigible work it would mean a naval detachment with every division, and perhaps every brigade, in the field, which would lead to endless complications. Consequently, looking at the question from a purely unbiased view, it seems to me that the Navy ought to take over the really big rigid ships, but that the Army might retain quite a fleet of collapsible air-boats, much as, I believe, the Sappers own a number of collapsible Berthon boats to help in bridging operations.

"One and Indivisible."

This point, of course, raises the still bigger question of whether the Royal Flying Corps can remain one and indivisible, or whether the Military Wing will become purely military and the Naval Wing purely naval.

There seem to me only two ways out of the present troubles. Either the aerial defence force must become a separate Service, apart from either the Navy or Army, with its own Air Office, its own Secretary of State for the Air, and all,—a possibility I suggested in this paper when the R.F.C. was first founded—or the two wings must split and be absorbed into their own Services.

The latter seems to me by far the better course. If a separate Service is formed it only means detachments of a Service which has its own traditions, habits, and manners—or lack of them—trying to operate with another on active service. Naval brigades have often done well ashore—as on the Nile and in China—and soldiers have done good fighting at sea, when physically able to do so, but no one would advocate mixing the two Services up for good, or regularly employing detachments of one Service in the other. In places the two Services touch, as in the late lamented submarine miners, and in matters of coast-defence guns and gunnery, but in all essentials they are different, and generally incompatible.

So in the R.F.C. it seems to me that, between the sea-going aeroplanes, the big self-contained 500-h.p. to 2,000-h.p. hydro-aeroplanes, and the little, light 50-h.p. scouts launched off the deck of a fast cruiser, there is more affinity than between these same light scouts and the light Army scout or the heavier Army fighting aeroplane. In methods of working, transport, personal habits and everything, the personnel of an army aeroplane squadron is nearer in feeling to a battery of artillery than ever it is to any squadron of the naval wing of its own corps.

There may be excellent reasons for the "one corps" idea, but I confess I have never heard them, whereas in both Services I have heard a plethora of reasons for splitting the two wings altogether and putting each on a sound footing as a new branch of its own Service.

Writing in the "Daily Telegraph," Mr. Ledeboer, in a very readable article, inclines to the belief that a separate Air Ministry is advisable. Here I disagree; but he blames the present muddle, so far as the Army is concerned, on the lack of an executive head, and this touches the whole root of the trouble. No one at the War Office seems to be directly responsible for the Military Wing, R.F.C., in the same way that Captain Murray Sueter, as Director of the Air Department at the Admiralty, is responsible for the Naval Wing. At the War Office a constructor can call half a dozen times, and each time interview a different but always courteous officer, who will explain that his department is only indirectly responsible for such and such a piece of muddle or delay, and then one is referred to Farnborough. At the Admiralty, as I have heard it described, "one walks in, asks for the Air Department, and there's a screaming scent breast-high the whole way to the office"—which is a hyperbolical way of saying that one gets the information one wants straight away, and Farnborough does not seem to enter into naval calculations over-much.

Undoubtedly, what is required is a responsible head for a Military Air Department at the War Office. Let us hope that some wonderful stroke of luck may bring about such an appointment. It would be the best thing possible for military aviation and for the aeroplane industry.

To sum up briefly, then: What we appear to need is a responsible head for military aviation, as the Navy has already. Two separate air corps for the two Services. Assurance of continuity of orders to aeroplane and engine makers. Then we can proceed to organise a really efficient system of aerial defence.—C. G. G.

The Dunne Flies Uncontrolled.

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Particulars of Aircraft—

Type: Dunne Biplane, two seater. Overall span 46 feet. Total Lifting Surface 552 square feet.

Motor: 50-60-h.p. 4-cylinder Green.

Controls: Hand levers only, no automatic controlling mechanism, gyroscopic, or otherwise fitted.

Description of the Trial.—The trial took place on Salisbury Plain on the 16th and 17th December, 1912. On the first flight on the 16th the wind was blowing in gusts up to 20 m.p.h., and the pilot ceased to manipulate all controls for a period of 1 min. 5 secs. whilst flying over a spot where irregular disturbances of the air were, from the actual experience of the official observer, known to prevail. The pilot only resumed operation of the controls at the request of the official observer, who was the passenger in the aircraft. During this period, the aircraft was quite stable laterally, there being an absence of both quick jerky movements and periodical rolling. The apparent effect of a gust was to cause the aircraft to turn steadily to the right or left.

The second flight on the 17th was made under slightly better weather conditions, and the pilot ceased to manipulate all controls for two periods of one minute each. During one of these periods the controls were locked, and the aircraft described a complete circle of 360 degrees, banking of its own accord at the correct angle. There was no feeling of side wind on the face of the Official Observer, thus showing absence of sideslip either inwards or outwards.

(Signed) C. D. Rose, Chairman.

(Signed) Harold E. Perrin (Secretary).

The periods seem inconclusively short, and have been exceeded by other machines which make no claim to stability, and there is no reason to doubt the Dunne's ability to exceed this test with ease. Only they seem insufficient grounds on which to issue a certificate. It is highly probable that before very long it will be possible to make long cross-country flights on inherently stable aeroplanes without using other than rudder control, and the Dunne should, on its present performances, be the first to win a certificate for such a flight.

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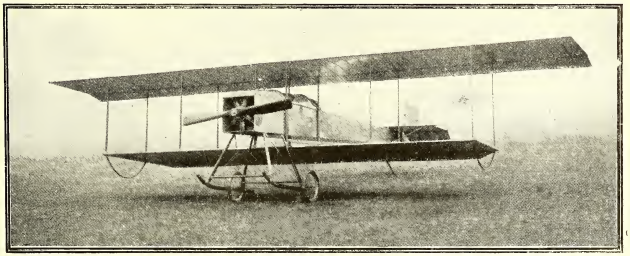
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Aerodromes.

BY W. E. de B. WHITTAKER.

An essential part of aviation equipment is a landing ground. This is an incontrovertible platitude. Yet, obvious though it is to any who give the subject of aeronautics a moment's study, the great mass of the public consider that the man and the machine are alone necessary for the maintenance of the new science. Yet motor-cars would be of little use without roads, and the absence of railway tracks would reduce the locomotive to an interesting engineering experiment. Before the science of aeronautics can reach its proper place in the scheme of things that be the provision of a large number of landing grounds is necessary.

Despite the Chancellor of the Exchequer a larger proportion of land is under cultivation in this country than in any other nation. Much of the land that is not under cultivation is heavily wooded or of a rugged nature, both kinds being equally unpromising from the aviator's point of view. The cultivators of the land would not welcome the constant use of their farms as aerodromes. The first step towards making a new science of general application popular is to regularise it by legal means.

It should be possible for an aviator to travel in any direction throughout Great Britain as freely as a motorist, yet cross-country flights are limited in their course by the lack of definite places at which to house their machines. For instance, should an aviator desire to fly to Chester he must make the flight without descent, or else rely on the courtesy and charity of some landowner on the route, and take the risk of smashing his aeroplane by alighting on unprepared land.

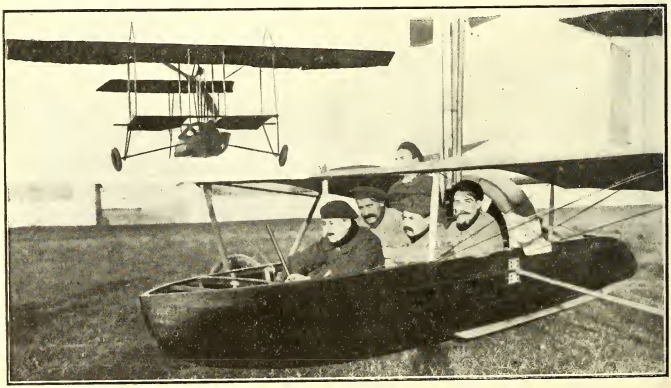
The most important section of those who fly is the Royal Flying Corps. It is an essential part of the country's defence forces. In a year or two the inefficiency of this unit would make all the difference between defeat and victory. Therefore, it is a public duty to assist it in every possible way. So far, its personnel is undergoing what is in actuality a course of preliminary training. It is creating rules of procedure and founding tradition. Those who come after will have something on which to base their efforts. In cross-country flying this nation has now reached the stage attained by France in 1910. And in the next few months we must needs make up for three years' delay. And we cannot do that unless a network of aerodromes is formed throughout the land.

So far as military needs are concerned it is primarily the duty of the Government. It is also the duty of the public to insist that the authorities take the necessary steps.

A Government has in theory to act for the general good of the nation and not for the prosperity of an industry or even a group of industries. In practice it is not always so. The morals of a Cabinet are not unlike those of the individual. Even so, it is an ideal in Government to make improvements at the least expense to the community. Therefore, so far as possible, it is desirable that the War Office and the Admiralty should form aerodromes on land already in their possession.

Many places where this can be done are obvious at once. Farnborough, Salisbury Plain, the Curragh, Lichfield, Weedon, and so on. At all these places all that is needed are a few sheds and some equipment. Arrangements could be made with the different arms of the Service using Government land to permit of the Royal Flying Corps making use of the ground in return for whatever payment is decided upon in an official scale.

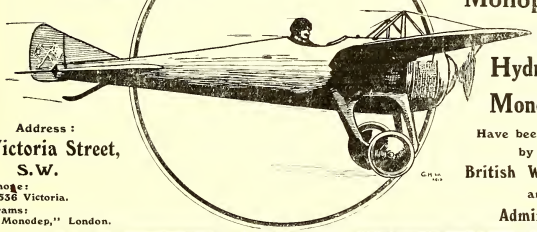
Then as to privately owned aerodromes. The different individuals or companies controlling civil aerodromes are naturally anxious to receive a substantial subsidy from the Government. Aviation, as a business, is in a poor financial condition, and any chance of securing money, public or private, is quickly grasped. Yet, in theory, it is not good policy to subsidise private enterprise. At the same time, no Government department ought to descend to meanness in its dealings with the public. There is a great difference



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between paying four shillings a night housing room for an official aeroplane landing on a privately owned aerodrome, and paying a large subsidy to that aerodrome. But there is certainly a stage between these two extremes.

The Government could surely become tenants of a certain number of sheds at each aerodrome for which they would pay the usual rent. To what uses they would put these sheds is immaterial. If a subsidy be paid, then it should be in return for the right to take over the aerodrome concerned for military purposes in times of national emergency. Such is the nature of the subsidies paid to the great shipping lines.

The most difficult question of all is the official formation of purely military aerodromes. The price of land varies so greatly in different parts of the British Isles that it is not possible to name an adequate sum of money for the purchase of ground for this purpose. No definite allocation of money could be made in the annual estimates for the creation of aerodromes.

The annual rent per acre of suitable land varies from £4 in parts of Cheshire to 5s. in Essex, and the rate of purchase may vary according to the circumstances from ten to thirty years. It is not unusual for landowners to raise their price considerably when they hear of the possibility of Government purchase. And even then the landowner is easier to deal with than those holding rights over common land. The fewer privileges a man may have the more exacting is he in enforcing their observance. There are innumerable societies for the preservation of common rights, public footpaths, etc., whose chief duty it would appear is to obstruct public progress. And their influence is hard to counteract. If legal means are used they will fight, and they will probably succeed, for they base their claims on history and sentiment, both of which are powerful factors in the life of the community. The only counter influence is public opinion, and to gain public opinion, public enthusiasm for the subject concerned must be raised. The general view of the mass of the people is certain of recognition, because the reputation of politicians rests on that insecure foundation. Those who wish to move the world must sway public opinion.

There is much talk at the moment of raising a public subscription in aid of our aerial forces. France, Germany, and Italy have each collected large sums of money for aeronautics as gifts from the people, and this is considered as setting an example worthy to be followed by this nation. It is a bad principle, however, for the people to carry out work which should rightly be done by the Government. The armed forces of this country should be raised and maintained in a state of efficiency out of the ordinary resources of taxation.

At the same time, there is no objection to a subscription for the purpose of providing aerodromes at different points in the country. Such aerodromes could be used by civilians as well as by soldiers. The Government would pay a settled rate per annum for the right of using the grounds. A scheme of this nature would do more to popularise aviation than any other method.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette":—

War Office, March 11. Regular Forces Royal Flying Corps.—Military Wing: Lieut. Frederick A. Wanklyn, R.A., to be a Flying Officer, and to be seconded; Nov. 28, 1912.

From the "London Gazette," March 13th:—

Special Reserve of Officers Royal Flying Corps.—Military Wing: To be Sec. Lieuts. (on probation); March 15th, 1913; Hon. Capt. Gilbert B. Rickards and Hugh C. Fuller.

FRANCE.

The Biskra escadrille of Farman biplanes now at Tunis will remain there some time longer. The motors are being overhauled. Lieutenant Aviator Lafargue, commanding the aviation centre at Biskra, has reported to France asking for the foundation of a hydro-aeroplane station near Tunis.

Captain Aviator Carlin, flying a Maurice Farman biplane at the Aerodrome de Bron on March 10, gave General Courbebaisse, Military Governor of Lyon, the baptism of the air.

Lieutenant Aviator Blard flew from Villacoublay to Chalons on a Henry Farman biplane (80 h.p. Gnome) on March 13th. He had with him a passenger.

Lieutenant Aviators Lalanne and Radisson, each with passengers, flew on March 14th from Maubeuge to Reims and back (130 miles) on Deperdussin monoplanes (80 h.p. Gnome engines).

Colonel Bouttieaux on March 14th made a long visit to the Farman School at Etampes. He had with him members of the Parliamentary Commission inquiring into the state of military aviation.

The French army has recently purchased a number of Clerget rotary engines (60 h.p.).

Lieutenant Aviator Personne was somewhat seriously injured through a sideslip whilst flying at Epinal on March 14th.

A landing ground is in course of formation at Brive la Gaillarde under the direction of the Ligue Nationale Aerienne.

At Etampes on March 13th M. Chevillard took five Henry Farman biplanes (80 h.p. Gnome engines) through their tests for the French army at Etampes.—W.

GERMANY.

The Naval Zeppelin L.1. leaves shortly for Hamburg, where it is to be finally stationed. The L.11. replaces it at Johannisthal.

The dirigible Schütte-Lanz is now nearly repaired.

The new Zeppelin L.Z.16, to be known as Z.4, is now complete and is waiting to undergo its official tests at Friederichshavn.

A supplementary vote of 20 million marks is to be devoted to the construction of ten military dirigibles. If report is true five of these, of Zeppelin, Parseval and Schütte-Lanz types, will be in the possession of the army by the middle of this year.

On March 12, a series of experiments were made in firing at balloons. Over twenty were pierced by shells, but as no particulars as to range, etc., are available, nothing of value can be gained.

An officer at Weisbaden claims to have discovered a method of rendering the fabric of a balloon impermeable to fire.

A new station for hydro-aeroplanes is to be opened at Kiel.

The Zeppelin dirigible L.111, in course of construction for the navy, is to be delivered at Johannisthal within the next few weeks.—W.

AUSTRIA.

H.I.H. the Archduke Francis Ferdinand has issued an appeal in the Viennese Press asking for a subscription towards the improvement of the Austro-Hungarian aerial fleet.—W.

ITALY.

The commission investigating the needs of military aviation has come to a decision. It insists on the formation of a central aeronautical institute. Each army corps in the Italian army will have attached an escadrille of aeroplanes (seven machines) with four officer pilots, four officer observers, and twenty-five men. Biplane escadrilles will be stationed at fortified places, monoplane escadrilles always to army corps.—W.

JAPAN.

A military commission authorised to enquire into the best means of forming an efficient aviation corps visited Reims on March 14th.—W.

THE ARGENTINE.

M. Bernard on March 14th took a Maurice Farman biplane through its tests at Buc for the Argentine Government.—W.

FOREIGN NOTES.

France.

On March 11th, M. Perreyon, the crack Blériot pilot, rose

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to a height of 19,500 feet on a Blériot monoplane (80-h.p. Gnome). He left the ground at Buc at 11.25 a.m., and landed at 12.32 a.m., having attained an altitude of 6,000 metres.

M. Fugairon flew from Rouen to Le Havre on a Bréguet biplane (Canton Unné engine) on March 9th, between 9.5 a.m. and 10.45 a.m. He intends to make a short stay at Le Havre lecturing and flying.

On March 10th, M. Legagneux, flying a Morane-Saulnier monoplane (Le Rhone motor) left Auxerre for Lyon. He stopped at Chalons-sur-Saone on the way.

M. Audemars, who is at Geneva awaiting a favourable opportunity to attempt to beat the world's height record, damaged his aeroplane (Morane-Saulnier monoplane) in a bad landing on March 10th.

M. Seguin intends to make an attempt to fly from Marseilles to Algiers on a hydro-aeroplane. He will make a landing in the Balearic Islands to replenish his tanks with petrol.

M. Legagneux, who is remaining at Lyon for a few days, made some excellent flights on March 12th on his Morane-Saulnier monoplane. M. Plantier, on a biplane, was also out, but Legagneux made circles round him time after time. M. Gilbert is also at Lyon with a Henry Farman biplane.

Integral Again.

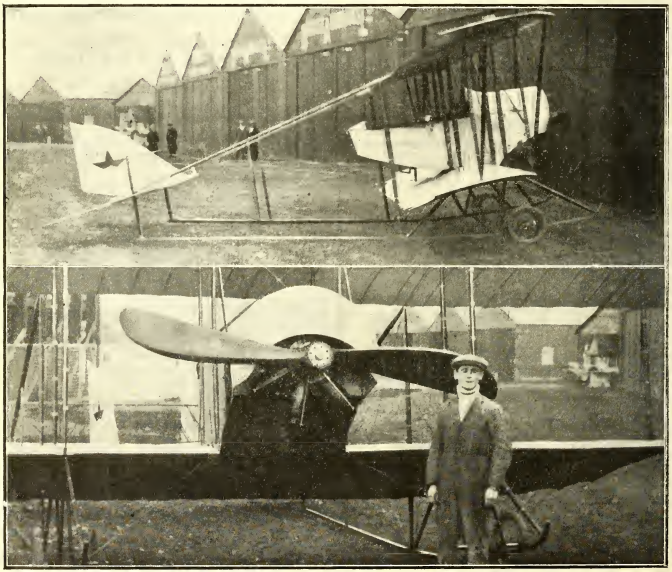
When M. Perreyon set up his new world's record for altitude last week, the propeller he used was a Chauviere Integral—not that this comes as a surprise.

Admiralty Testing Extraordinary.

M. Chevillard, the crack pilot of the Henry Farman school at Etampes, gave a wonderful performance at Eastchurch on Saturday last, when putting the new 80 h.p. Gnome Henry Farman through the Admiralty tests. At the time the upper wind was blowing at fully 50 miles an hour, but after a short test flight M. Chevillard decided to do the hour test. He reached the necessary 3000 feet with full load in something under twelve minutes, and at the expiration of the test, came down with such a terrific banked dive that even the experienced naval aviators present started running to the spot, where they expected him to fall, and the players and spectators at a football match some three fields away seeing him disappear behind the sheds in a vertical attitude hurried to the aerodrome to see the wreck. Apparently, however, this is merely M. Chevillard's particular method of descending.

A Good Caudron Test.

The 80-h.p. Caudron biplane ordered for the Admiralty was put through its test at Hendon on Thursday last. For the hour test it was flown by M. Marty, who was arrested with it the previous week for flying over a prohibited area, and for not giving warning of his intention to arrive. After the hour test, M. Caudron himself took it up for the climb with Paymaster Berne, R.N., as passenger. The machine reached 3,400 feet, and descended again, all in 14 minutes.



A Caudron biplane (70-h.p. Gnome engine) recently purchased by the Admiralty. M. Marty, the first pilot to be arrested under the new "Air Laws," is seen in the lower picture.

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The Royal Aero Club Annual Dinner.

Taking it all round, the Royal Aero Club dinner, which took place on Thursday last, was a very entertaining affair, albeit certain speeches were unavoidably longer than some people quite relished. As usual, there was a large attendance of those who like to consider themselves patrons of aviation on the strength of only appearing at such functions as this, and as they usually adopt the principle of booking their seats early, their presence is apt to keep away more interesting people who, unfortunately, are either so busy or so casual that they neglect to book their places in time, for even the ingenious Mr. Perrin is unable to make five go into four.

Notable Absentees.

One could not help noticing the absence of officers of the Royal Flying Corps, very many of whom are members of the Royal Aero Club, for apart from two or three officers who were there more or less in their official capacities, there was not a regular officer of the R.F.C. in the room. This may have been purely a matter of chance, but it caused some comment, and it certainly struck many of those present that it was accounted for by the presence of the Secretary of State for War, who, at any rate, had the pluck to confess himself responsible for the present lamentable state of affairs.

The Chairman's Review.

After the usual loyal toasts the Chairman of the Club, Sir Charles Rose, gave a review of the Club's work during the year, pointing out that there were now over 1,400 members, and that the present premises were too small for them. He said that the members would feel a sense of personal loss at the deaths of fourteen of their number in aeroplane accidents during the year. Our only consolation was that other countries suffered equally, and we must carry on the work for which they had given up their lives..

The Club had now issued 446 aviators' certificates, of which 270 had been issued in the past twelve months; of the total number (not of the 270 as erroneously stated in some papers) 230 were on the active list of his Majesty's Forces. He referred to the public spirit of the donors of various prizes, such as Lord Northcliffe and Messrs. Gordon-Bennett, Singer and Manville. He was glad to see that our Naval and Military leaders were taking an interest in the subject. He believed we could still catch up our foreign competitors. It was not his place to criticise the Government, but one could not fail to see what other countries were doing. His Right Honourable Friend the Secretary of State for War would not be deterred from asking for any sum however large which he might think necessary; he would have the public at his back, and the people would not grudge any sacrifice to make up lost ground, and there would be no difficulty in manning the air fleet when it was formed.

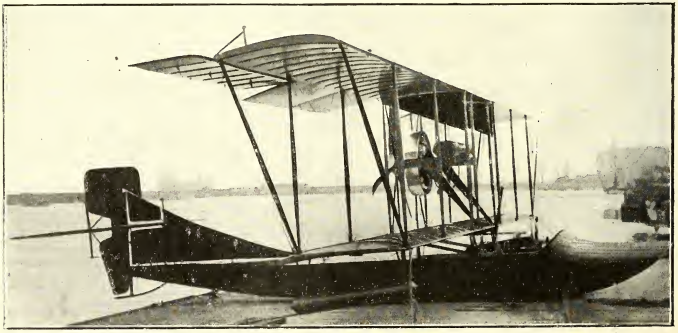
Colonel Holden, C.B., F.R.S., in proposing the toast of the guests, welcomed Colonel Seely personally as well as on account of his high position in the State, and remarked that he must often find himself in a very difficult position. He also coupled the name of Mr. Joynson-Hicks, M.P., with this toast.

Colonel Seely's Evasions.

The Right Honourable Colonel J. E. B. Seely, Secretary of State for War, on rising to reply, was received affably, but by no means enthusiastically, and in the course of his speech he seemed to feel that he had not the entire sympathy of his audience, though as usual his sentiments were above reproach; in fact, my next-door neighbour described his speech as consisting of honest declamation rather than of practical purport.

Colonel Seely remarked that he ought not really to be a guest of the Club, as he was one of its first members, and he hoped he would still be welcome as a member after presenting the Army Estimates on the next Wednesday. He said that the thanks of the country were due to the brave men who fly, and to the brave women who let them fly, and England must look to them for her success in the air.—This, of course, is an excellent sentiment, but one may point out to Colonel Seely that if things are allowed to muddle on in future as they have been allowed to do during the past twelve months nobody but a fool would think of flying so far as the good of the country is concerned.

He confessed that he had been for more than a year responsible for the policy which had been followed, and he thought it would be admitted that our progress had been greater than any other nation had made in one year.—One is surprised to find even Colonel Seely making such a statement as this. It is true that, thanks to the pertinacity and pluck of the men who have kept our starved industry alive, we are not so far behind in our knowledge of aviation as we might be, but the mere idea of comparing our progress in any other direction with that of any foreign country during the past year is not only ludicrous, but absolutely misleading. Colonel Seely must either be singularly ignorant of facts, or else must have been hoping that his audience knew less about aviation



An American hydro-aeroplane. The Columbia biplane (80-h.p. Gyro engine).

than he does himself, a somewhat daring assumption under the circumstances.

He emphasised the fact that whatever faults exist were not due to the Chancellor of the Exchequer, but to himself, though, unfortunately, he did not appear to be as ashamed of this statement as our present position would indicate as fitting; in fact, he appeared almost self-complacent. He asserted that it was impossible to set a standard for the number of aeroplanes in relation to guns or cavalry, and it might be that we should have to adopt a far higher standard. He then delivered a eulogy of the brains and skill of the constructors and pilots in this country, a eulogy which would be more appreciated if the department for which Colonel Seely makes himself responsible would provide the owners of the said brains and skill with the opportunity for making a living.

He commented on the excellent performance of the machine which won the Military Aeroplane Competition last year, and of the "scientifically designed" machine built by Government employees, which did not take part in the Competition, though it went through the tests.—One might here draw attention to the fact that, without in any way decrying the performances of the said "scientific machine," one might attach more value to these performances if the unfortunate constructors of the competing machines had as much to do with the composing of the tests as had certain of those connected with this machine, also if they had a knowledge of what the tests were to be equally long before they took place, and if they had had an unlimited supply of other people's money with which to experiment during that period.

Colonel Seely proceeded to express his usual opinion that if the use of aeroplanes was to be extended to commercial purposes constructors must endeavour to secure greater safety.—On this point one would like to intimate to Colonel Seely that if he had done his duty during the past twelve months in "fostering a healthy industry" as he piously proposed to do some sixteen months ago, we might be very much nearer the safe aeroplane than we are to-day.

Finally, he publicly thanked the Royal Aero Club on behalf of the War Office for the services it had rendered.

Mr. Joynson-Hicks' Rejoinder.

Mr. W. Joynson-Hicks, M.P., who followed, was enthusiastically received. He referred to the graceful manner in which Colonel Seely had glided over weak points. He said that it ill became him as a co-guest of Colonel Seely to attack the Government, but he did feel that the present position did not redound to the honour of the country. At this remark the room fairly rose at him, the cheering continuing for several minutes.

When allowed to proceed, Mr. Joynson-Hicks said he would be the first to congratulate his Right Honourable friend if on the following Wednesday he was able to announce that the position in the next twelve months would be that we were equal to Germany in airships and to France in aeroplanes. This touch of sarcasm also took the fancy of his audience, for the majority knew that in order to achieve this desired end a sum of many millions would have to be spent, and that it would be absolutely impossible to spend it effectively in the time.

Mr. Joynson-Hicks modestly referred to the fact that he had devoted himself to the question of aerial defence during the past six months, and said that so far as air power was concerned he was determined that Great Britain should not lag behind. He terminated an all too brief but exceedingly telling speech by expressing the hope that we should still welcome Colonel Seely in our hearts when we knew all.—By the time these notes appear we shall know all, or at any rate we shall know the worst, for it is obvious that we cannot hope to compete with either Germany or France during the next twelve months, and if the present system of civilian meddling with military material is allowed to continue we shall simply lag further and further behind.

The Michelin Prizes.

Mr. Wolff, on behalf of the Michelin Co., then presented the Michelin prizes to Mr. Sopwith, who acted on behalf of Mr. Harry Hawker, and to Mr. Cody. Mr. Cody, in response to continued calls for a speech, said that he was pleased to see so many present who knew him when he first took up his mad idea of attempting to fly. He said that he felt that he had been hit by the comparison drawn by Colonel Seely between the machine which won the Military Aeroplane Competition and the "scientifically constructed machine" of the Army, and said that he hoped that his competition winner was also scientifically constructed. At this retort to Colonel Seely's lamentable *faux pas* the audience was again moved to express itself in an almost adequate manner. On the subsidence of the applause Mr. Cody remarked that anyhow his machine was open to compete against anything in the world, and sat down amid renewed cheers.

Mr. Sopwith, who was also called upon to speak, said that he was there as an imposter, as the credit of winning the Michelin Duration prize did not belong to him but to Mr. Harry Hawker, who was away. He said that though a flight of 8½ hours was a big strain on the man, a word should also be said for the A.B.C. motor, which made the flight possible. Great good had been done by the brothers Michelin and others in giving prizes for all-British machines, and this performance was the best reply to the idea that one was forced to go abroad for a good motor—another retort to official policy which met with obvious approval.

Thereafter there was a musical entertainment which was really entertaining, during which Colonel Seely held what appeared to be a semi-official reception of aeroplane constructors in the hall of the Royal Automobile Club. I have not yet had an opportunity of learning all that he said, but I gather that in most cases he again advocated the development of automatic stability, and that when one constructor approached more immediately pressing questions affecting the support of the industry it unfortunately happened that another generally hove in sight to distract attention from the point. However, it is to be hoped that any promises he made for 1913 will not resemble his 1912 pattern promises.—C. G. G.

The Army Estimates.

The following is an approximate list of the items of expenditure appearing in the Army Estimates for 1913-14, and concerning the Royal Flying Corps. No detail is gone into in this transcript, but the subject will be dealt with at length after Colonel Seely's statement this week:—

Vote 1. Appendix 2.—R.F.C., Regimental Pay, etc., including Flying pay, £117,500.

Vote 1. M.—Pay, etc., of the establishment of the Central Flying School (last year £8,000), £23,800. This includes a sum of £7,500 to cover grants to officers who obtain air pilots' certificates.

Vote 9. P.—Aviation: Royal Aircraft Factory Staff, salaries, wages, etc., £44,000. Stores and materials, £190,000.

As against £155,000 last year, a total vote of £234,000.

Vote 10.—Aldershot Command, R.A.F. and R.F.C. buildings, £20,050. Eastern Command buildings, £25,000. Southern Command, C.F.S., buildings, £1,000. Southern Command, Salisbury Plain, R.F.C., barracks, £20,000.

Votes 2, 6, 8, 9, 10 11, 13, 14, and 15.—All other R.F.C. expenditure £21,000.

Total Estimated Expenditure, £462,350.

The Aeronautical Society.

The subject for discussion after the Aeronautical Society's Annual General Meeting, March 26th, will be "The Effect of the Government Aeronautical Programme upon the Industry."

From the Seat of War.

From Mr. Giovanni Sabelli comes a post-card written in the neighbourhood of Gallipoli, saying that he has been moved to the South of Turkey, and has been doing quite a good deal of flying over Gallipoli, the Dardanelles, and Asia Minor, and that the tandem Blériot is going excellently. Everyone will be pleased to hear that the popular little Italian pilot is doing well, and we shall all be glad to see him back again as soon as possible.

Exhibitions at Hendon.

To a great extent Thursday was a Caudron day at Hendon, no less than six of these biplanes being seen in the air. During the morning M. Marty took up the new 70-h.p. Gnome-engined machine, and in the afternoon he put the new 80-h.p. Gnome through its hour test for the Admiralty, after which M. Caudron himself took the machine up for its height test, reaching three thousand four hundred feet, and coming down again all in something less than fourteen minutes. Mr. Lewis Turner made some excellent flights upon the well-known 60-h.p., and 35-h.p. Anzani-engined biplanes, while a 28-h.p. school machine was also in the air. The sixth Caudron biplane was Mr. Lee Temple's 35-h.p. In the early afternoon he took it to a height of 800 feet, but the climb was spoiled at that point by the arrival of a fog which made it too risky to continue. Fortunately the fog cleared in a short time, and Mr. Temple made several other good flights during the afternoon.

The most striking feature of the afternoon was Lieut. Spenser Grey's handling of the speedy 80-h.p. Gnome-Sopwith tractor biplane, whose sensitiveness to control is truly astonishing. Lieut. Grey wastes no time in banking; he has the machine steady on its new course by the time an average biplane is half-way through its turn. Certain performances on a machine so speedy as this are alarming to see, and it is to be hoped—for a passenger's sake—that the effect of a steep 75-m.p.h. dive, ending in a last moment upward jerk to safety, is not so appalling to experience as it is to watch.

M. Noël was up several times in the Henry Farman, and M. Desoutter took the Blériot for a flight. Mr. Spratt also did some graceful pyloning on a 35-h.p. Deperdussin. M. "Vitry" was on the course looking none the worse for his recent accident; he did not fly, however.

M. Verrier, after describing some extraordinary convolutions, left his gasping spectators to untangle their necks and uncross their eyes, and took the Maurice Farman to a great height.

Altogether, the afternoon's display was well worthy of the excellent weather conditions which prevailed.

Saturday, on the contrary, was a miserable day, cold and windy. The only flight was made by M. Verrier, who took M. "Vitry" for a couple of horrible circuits on the Maurice Farman. The machine was pitched all over the place and the experience must have been a tonic to the nerves of the passengers, coming so soon after his smash.

Despite the very bad weather on Sunday, some hundreds of people who ventured to the aerodrome saw what was undoubtedly the finest flying of the last few months. M. Chevillard, the crack Farman pilot, took up a new British-built 80-h.p. Henry Farman, and performed with it in a way which has never been beaten even by Mr. Hamel at his worst, and this despite a gusty wind blowing between 35 and 50 miles an hour aloft. One is certainly not accustomed to see a large biplane turning small circles almost vertically on one wing tip, but Chevillard was on several occasions undoubtedly up to an angle of fully 60 degrees. During the afternoon he took up several passengers, among them Mrs. Holt Thomas, Mr. Holt Thomas, and Capt. Tyrer, and with each he finished the flight with an appalling curly dive.

After he had finished Mr. Manton turned out on the 50-h.p. Grahame-White biplane, which at times was scarcely able to make any headway against the wind, but in spite of this Mr. Manton turned into the wind time and again with dives which nearly approached those done by Chevillard. One only hopes Mr. Manton will not continue this practice, for clever as he is, and stoutly built as the machine is, it has not either the speed or power to stand what the 80-h.p. Farmans will, and he must have been on occasion perilously near the limit of safety.

M. Verrier on the Maurice Farman also took up a number of passengers, and performed, if possible, even better than usual. Mr. Noël also made two or three very good flights on the 80-h.p. Farman, but his engine was not running well, so he attempted no tricks, and M. Desoutter, also suffering from engine trouble, only did a couple of trial flights.

A particularly fine performance was put up by little M. Marty on the 70-h.p. Caudron, which has been bought by the Admiralty. The machine seemed notably steady in the gusty wind that was blowing, and his banked turns were almost as astonishing as those of M. Chevillard. Certainly it was worth while going to Hendon in spite of the weather.

Both M. Chevillard and M. Marty are to be at Hendon over Easter, so there will be added attractions for the spectators.



M. Chevillard and Mr. Holt Thomas, chief of the Aircraft Company, taken immediately after an astonishing descent on Sunday last.

The Event of 1913

GHENT

International Exhibition

Opens April 26

Le Bulletin de L'Institut Aerodynamique de Koutchino.

In each European country there is one experimenter or a group of experimenters who have made a special study of aeronautical work, and are daily adding much to results upon which the theory of flying is founded.

In England there is the National Physical Laboratory, in France Eiffel, in Germany Göttingen University, and in Russia Riabouchinsky at Koutchino. The fourth Bulletin of the institute at the latter place, which has just been issued, is a welcome addition to the previous three volumes. The present one mainly deals with experimental researches to account for the different results obtained by different experimenters, and some of the papers have already appeared in the "Aérophile."

Mr. Riabouchinsky has examined Rateau's results and finds that the movement of the centre of pressure is a continuous function of the angle of incidence, instead of suddenly changing its position when the plate is inclined at an angle of about 30 degrees.

It would seem that Rateau's results were the more correct as there are two distinct forms of flow round the plane back, depending on the angle of incidence, and thus one might obtain either form of flow near the critical angle, depending on whether the angle were being increased or decreased.

An examination of Eiffel's tunnel is a very interesting study, and one that Riabouchinsky carried out by having a model tunnel made up and fitted in his own wind tunnel, and then examined the form of air flow. This would seem to show that in Eiffel's tunnel the form of flow is by no means straight.

There is also an interesting examination of the tunnel at Göttingen.

The volume concludes with a description of the Hydrodynamique Laboratory which they now have working.

From the practical point of view Riabouchinsky makes an important correction. All the results previously given by him, such as pressures, etc., on planes, are 3 per cent. too high, owing to incorrect readings of the wind velocity in the tunnel.

The Identification of Aeroplanes.

The question of the identification of aeroplanes was discussed in last week's AEROPLANE, and many ideas were put forward, but it seems that the simplest solution for a satisfactory distinguishing feature was omitted. It is agreed that colours are indistinguishable when a machine is flying above a certain altitude, and that the whole machine, by shutting out the rays of light, appears perfectly black against the sky. The obvious way to obtain a satisfactory identification, therefore, is to cover some part of the machine with a transparent material which would not shut out the light, on which distinguishing marks or numbers could be made.

The suggestion was made that a standardised form of elevator and rudder should be adopted for all military machines, but this would no doubt present difficulties with the manufacturers, and it would be comparatively easy in time of war for foreign aircraft builders to adopt the same distinctive shape, and to fly undisturbed over the British lines.

I think that the easiest way would be to cover the rudder and tail planes with a transparent material, on which could be painted some distinctive mark, which would, of course, show black against the sky. Identification would be easy, not only from the ground, but also from machines flying above by means of the marks on the elevators, and machines flying at the same altitude would easily see the distinguishing marks on the rudder.

This system of marking has, moreover, the great advantage that it can be changed frequently, in order to prevent it being copied by the enemy. A. J. A WALLACE BARR.

Aero Engines and Gear Drives.

In the course of a discussion on "Gear Drives" before the North-East Coast Institution of Engineers and Shipbuilders, Sir Charles Parsons, of turbine fame, and others of wide experience, expressed their belief that it is possible to transmit practically any horse-power efficiently by means of gearing. This agrees absolutely with the belief which has been expressed from time to time in this paper that the proper way to obtain an efficient aeroplane engine is to design for very high engine speeds, and then gear down to obtain propeller efficiency. We shall before long require engines of anything from 500 to 1000 h.p., and then, of course, gearing will become a necessity.

One of the comparatively minor troubles in connection with gear driven propellers is that unless one uses a rotary engine it is necessary to have a flywheel of some weight on the engine itself, and this means carrying so much dead weight to no purpose. It seems to the writer that it should be quite possible to design a combined magneto arrangement and flywheel, so that the force expended in causing the flywheel to revolve would also operate the ignition. At present the magneto is simply so much dead metal, and the power required to drive it is pure waste. Surely some of our electrical engineers are clever enough to utilise this weight and power for flywheel purposes. It is done in one way in the Ford car, and it ought to be possible to do it in even a neater way in an aero engine.

"City Day" at the London Aerodrome.

On Saturday, April 19, there will be held a great "City Day" at Hendon, when the Lord Mayor of London and as many as possible of the Mayors of the twenty-eight boroughs which form the County of London will attend, as well as the chairmen of the L.C.C. and other public bodies.

Easter Monday at Brooklands.

The Easter Aeroplane Handicap, an out and home cross-country race of about 10 miles, will be flown at 5.20, after the motor racing has finished. There will be three prizes (cups or cash at option). To the winner fifty guineas, presented by the British Petroleum Co., Ltd. To the second and third men £25 and £10 respectively.

Flying at Cape Town.

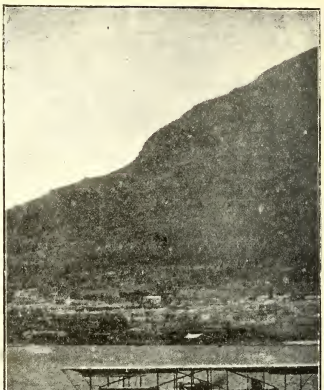
On or about February 14th last, Mr. Compton Paterson, formerly of Freshfield, and of the Grahame-White Company, commenced a series of hydro-aeroplane demonstrations over Table Bay. The weather conditions appear to have been ideal. Mr. Paterson evoked considerable enthusiasm by the manner of his alighting upon the water, and by a trick of flying along at great speed within a few inches of the surface with astonishing steadiness. The machine is one built to his own design in London and fitted with a 50-h.p. Gnome.

Mr. Hamel's Accident.

Mr. Hamel's lucky escape from a serious accident at Bangor on Wednesday last shows how skill and judgment may save life and limb. The following description is worked out from Mr. Hamel's own account of what happened. He started against a strong wind heading towards some trees, intending to get up high, do a circuit, and come down, for he always gives a show when advertised to do so. Behind the trees the ground sloped up to the mountains, so that the general trend of the wind was downwards, much as at the Leopardstown meetings in Ireland. Owing to this the machine could not climb properly, so that he found himself practically standing still about level with the tree tops, getting pitched about badly, and not rising at all. As he slowly approached the trees he got into the down current over them and dropped still more, so he immediately decided to land. Just as he did so he passed through the outer current into the actual "breaker" of the air wave, where there was no support at all, and dropped like a stone some 50 or 60 feet. He managed to keep the machine square, switched off, and pancaked straight on to the chassis, which was wiped out without doing much damage to anything else. Mr. Hamel escaped with a few scratches on his legs. It will be seen that the accident was the exact converse of the one in which Lieut. Parke, R.N., and Mr. Hardwick were killed, and it emphasises the fact that at all costs a machine must be kept head to wind when landing in rough weather.

The New Record Blériot.

M. Perreyon's height record of just under 20,000 feet must have been one of the most wonderful sights ever seen. He used a 160-h.p. Gnome (two eighties coupled) on his Blériot, and it is said that he went straight up like a helicopter. At any rate, he climbed 1,000 metres (3,250 feet) in 1 minute 25 seconds, or something better than 2,000 feet per minute. He was still climbing fast when he reached the maximum height, which he had previously surpassed unofficially, but his supply of oxygen ran out and he had to come down. The descent only took between ten and twelve minutes, and the whole performance was done in just over the hour.



Mr. Compton Paterson in Table Bay.



Mr. Compton Paterson over Cape Town.

Those who saw M. Perreyon at Salisbury Plain recognised that he was made of fairly tough material, but this latest performance shows that he must have a head either of steel or indiarubber to stand the variations of pressure.

This new Blériot has a speed of about 100 m.p.h. There is no landing chassis to speak of, merely a couple of struts and a pair of wheels, and M. Blériot says there are only three pilots he would trust on it—MM. Perreyon and Garros, and Mr. Hamel. There is just a chance that Mr. Hamel may have one over here in a month or two, and, if so, we are likely to see something in the way of a British height record put up.

A New Dirigible-Destroyer.

Mr. Cody has recently explained to me in detail the operation of a new system he has invented for the destruction of dirigible balloons. At the moment I am not permitted to describe the working of the system in detail, but having studied it from every point of view I cannot see any fallacy in his reasoning. Given a good pilot, an aeroplane which has a fair excess of speed over the dirigible to be attacked, and the ability to climb above it, it should be possible for the pilots of the said aeroplane to destroy any dirigible of any size without coming down within 2,000 feet of it. It may be well to make a note of this fact for reference when the workings of the invention are made public.—C. G. G.

The Brighton-Shoreham Aero Club.

A gymkhana meeting will be held on Saturday, 22nd, and Monday, 24th inst., commencing each day at three o'clock.

Present Possibilities of Aeroplanes.

BY P. K. TURNER.

I have taken the above somewhat Hibernian title as I wish to sum up what our present designers, constructors and engine-makers could do, if they would try, and if they could get adequate financial support.

I am going to suppose that our "scientific constructor" has found an engine which, with its cooling and ignition apparatus, weighs 4 lb. per h.p., and which can keep up this horse-power for a good long run. I am also going to suppose that this engine takes .08 gallon of petrol per h.p.-hour, and that it takes one gallon of lubricating oil to six of petrol. Each of these suppositions is at present fulfilled by various engines, though I do not know of one which fulfils them all.

Now what can be done in the way of a cheap machine? It must, to be satisfactory, carry a 160-lb. pilot. To be suitable for cross-country work, it must be able to lift him to 1,000 ft. at least. Since it would be sold simply as a cheap machine, it need only carry fuel for an hour's run, and it need only do, say, 45 miles per hour. Now a few simple calculations, with liberal allowances, show that a machine with about 240 ft. of surface, say, a biplane of 4 ft. chord and 30 ft. span, could do this easily with about 20 h.p., with careful design. If larger tanks are put on, the machine could do a three-hour run with a 30-h.p. engine.

That this is not merely the result of a riotous imagination is proved by the fact that a machine of this type, in the hands of a skilful pilot, has done excellent cross-country work, and has lifted 27 stone to 500 ft. This particular machine, if it had been more stoutly built, would not, perhaps, have lifted the passenger so well: but it would have made a delightfully safe and cheap machine. Such a plane, with its 25-h.p. motor complete, need not cost more than £300-£350.

Secondly, what can be done in the way of a fast cross-country single-seater? In this case the speed should be at least 60-65 m.p.h., and the machine should carry five or six hours' fuel. Under these circumstances, it would obviously be wise to fit a passenger's seat, since the machine will carry a passenger and a small fuel supply just as well as the pilot solus with several hours' fuel. Again, elementary figures show that a machine of 180 sq. ft., with a 90-h.p. engine, fulfilling the conditions asked above, can travel at 70 m.p.h., with seven hours' fuel on board, or can lift a passenger with one hour's fuel.

To show that proper allowances are being made, only 12 h.p. out of the 90 h.p. is assumed actually to act in lifting the machine, the remainder being lost in head resistance, skin friction, and propeller losses! Moreover, these losses are not calculated by fantastic methods, but are averaged from the successful machines of the present day, with a small percentage off—for, as I said, I am speaking of efficient machines, of which very few exist. Such a machine, with engine, should cost £300-£600.

Thirdly, let us take the case of a fast single-seater "track racer," i.e., a machine for races where repair cars, etc., are allowed, so that a mechanic need not be carried. (Such a machine, of course, is a useless toy, but it is interesting to see what can be done.) The speed of the present record holder is probably about 105 m.p.h. By working it out we find that a machine of about 150 sq. ft. surface, with a 120-h.p. engine, could carry the pilot and two hours' fuel at 100 m.p.h. Head resistance, of course, would have to be cut down to a minimum, and the machine probably could not be sold under £1,000-£1,200.

Another type of machine for which there would probably be a demand is what one might call a "business" or "military" machine: a two-seater, with duplicate control, suitable for long journeys at a fairly high speed, and one which will carry, besides its two pilots, goods or "munitions of war" to the weight of 80 lb. or so. Such a machine will require an engine of 60 h.p., and should have about 360 sq. ft. of surface. It would lift the above load, with 5 hours' fuel, and would do 60 m.p.h. Its cost would be £750-£850.

A middle-aged gentleman desiring to tour the country with his wife would probably like a machine with an enclosed body for two, with a separate seat for his chauffeur (for whose tuition in flying he will have paid £75 or so). This machine would be practically similar to the last, except that for the lady's sake it would be made a trifle slower. It would have about 400 sq. ft. of surface, and would do about 50 m.p.h., carrying 4 hours' fuel. Its cost would be say, £800-£900, exclusive of interior decorations and fittings.

Two other "styles" demand our attention. One is a rich man's machine, in which he can take his family, or elope with a lady, her maid, his own valet-chauffeur-pilot, and the Bishop—a five-seater, in fact. This machine would have 600 sq. ft. of surface (about the size of Renaux' big Maurice-Farman), and, with a 100-h.p. engine, could do 60 m.p.h. for six hours, by which time, even with the most carefully arranged controls, the pilot would have had quite enough. However, this is of little importance, as in this case he would be merely a menial.

The other machine is one which looks rather further ahead—to the days of aero-express goods, mail or passenger traffic: a machine to lift 2,000 lb. of useful load or 12 passengers. The two main difficulties lie in getting the engine or engines—350 h.p. will be needed; and in the control, which will have to be worked on a relay system of some kind. The surface would have to be about 1,400 sq. ft., and the speed about 45-55 m.p.h.

Finally, I would again lay less stress on the fact that these proposed machines are not the wild day-dreams of a mentally deficient inventor. Every one of them could be built with the knowledge of the day, if only someone would combine in one engine the good points of several.—P. K. T.

The "Common Person" and the Aeroplane.

"Do you believe in them there aireoplanes?" he asked me abruptly, indicating the illustrations in the journal I held. He was just an ordinary, everyday sort of person, such as you may see by the hundred in any great city, and he was sitting opposite to me in a suburban train. His glance had been wandering from his paper to mine, which seemed to have a fascination for him. I looked at him curiously, not being quite clear as to his meaning.

"D'you think they'll ever be any good?" he went on; "I don't! Never did! Why, you never see anything about 'em in the papers but what there's a smash up. Sometimes the man gets killed and sometimes he only gets his arms and legs broke, and then he's lucky. I can't see what they do it for—might as well go and jump over a precipice and done with it. If the least little thing goes wrong or the engine stops, down you come like a shot pheasant, and there you are!"

He paused for breath, and I took advantage of the opportunity to enlighten him a little as to the proportion of fatal accidents, what happens if the engine stops, and the amount of flying done every day without damage of any kind. A few paragraphs from the "Week's Work" made him open his eyes.

"But if there's all that flying done why don't they put it in the papers like they did when Blériot flew across the Channel—that *was* doing something; but you never hear of anything like that now." He thought he had me there, so I told him that crossing the Channel by aeroplane was now such an everyday event that it wasn't mentioned by any but the technical journals. He evidently did not believe me, but could not question my statement.

"But it's against Nature for men to fly," he went on, somewhat irrelevantly; "if they'd been meant to fly they'd have had wings like the birds." In reply I asked him if he had any moral scruple against travelling in a train when Nature hadn't fitted him with wheels, but all the satisfaction he could give me was, "Ah, but that's different—quite another thing. And, then, what do they want all that power for? Fifty horse-power to take one man along! Tell me that!" So I told him that an aeroplane didn't need any more power than a motor-car, and pointed out an illustration of a certain 35-h.p. machine that will carry two people a great deal faster than a motor-car, much cheaper, and quite as safely.

"That's all very well," he said, rising to get out as the train slowed down, "but they'll never be any good: the least puff of wind and you get blown over and smashed. You'd never get me up in one of them things. No! not if you paid me!" And with this final clincher he sprang out of the carriage, still travelling about twelve miles an hour, holding fast to his halfpenny daily and his own ideas of safety.

From the bottom of my heart I pitied him, for how could he be expected to know or believe anything but what appeared in the columns of his sensation-loving guide and mentor, the Daily Paper?

S. P. E.

Territorials and Aviation.

Mr. T. F. Pearson, 6a, Deane Road, Fairfield, Liverpool, writes :—" Your article " A Suggestion for a Territorial Air Corps," is very interesting, but I would like to make a few further suggestions and amendments.

There are many young engineers in this country who take a great interest in aviation, and would give their services to the Government in exchange for the advantages mentioned. Many of them are so anxious to give assistance that they will attend at the hangar each evening during the week, and even Sunday, too, if necessary.

Now a few of these young men could be gathered together and given a start, say about twenty or twenty-five of them, with a little aid from the War Office of, say, £750, which would be spent as follows :—

	£	s.	d.
Engine	380	0	0
Necessary Materials	80	0	0
Hangar	60	0	0
Tools	20	0	0
Repairs and Replacements	60	0	0
First Pilots Ticket	75	0	0
Ground	60	0	0
Sundries	25	0	0
Total	750	0	0

With the additional cost of petrol and oil, one machine could be built by the corps and flown for one season, which expenditure I can prove is quite enough, because we have done it quite easily on two-thirds this amount with a little economy.

When we allow £60 for the hangar we could save about £20 if it was built by the corps.

If this small air corps was successful it would gradually grow until each town would have a good and strong aerial reserve, which would be of great assistance to our country in case of emergency.

Now, if the Government cannot see their way at present to finance one of two of these little schemes, could not each of our large towns and cities subscribe this small amount of £750 and give the movement a push off?

Then when the Government found that these small schemes were a success, they would give us their assistance, and the little aviation corps thus started would flourish and become a strong reserve.

With regard to the design of machine to be built, the competition suggested is quite in order and should be successful.

Now, to push this matter forward, would it not be advisable to get together in each of our large towns a few of these young men, and if we cannot get a Government grant, start a subscription as suggested? If any gentlemen in the Liverpool district who are interested in this will communicate with me at the address given, we will form a little body, and do our best to start a Territorial Air Corps, and set a good example to other towns and cities."

On the same subject Mr. A. Curtis, of Golders Green, writes :—" I read with much interest ' S. W.'s ' article on the Territorial Air Corps in this week's Aeroplane. It is an excellent idea, and there is no doubt that such a corps is vitally necessary as ' eyes ' for the Territorial Forces. Now is the best time for its formation. By September, when we usually have comparatively calm weather after the summer heat remous, we might have the ' T.A.C.' well started.

" Inside a month we could have all preliminaries fixed and instructions issued from the War Office, that is, if a deputation could approach Colonel Seely with that object in view.

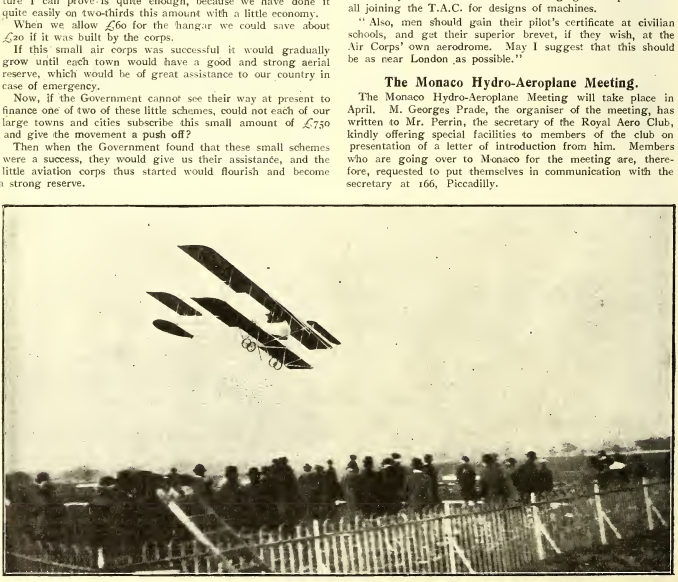
" As a member of the London Rifle Brigade, I am very interested in the scheme, and if anything comes of ' S. W.'s ' suggestion in the near future, I should immediately enlist in the Air Corps. I suppose the scheme is to allow all Territorials the chance of enlisting, with, of course, the permission of their Commanding Officer.

" I very much like the idea of arranging a competition for all joining the T.A.C. for designs of machines.

" Also, men should gain their pilot's certificate at civilian schools, and get their superior brevet, if they wish, at the Air Corps' own aerodrome. May I suggest that this should be as near London as possible."

The Monaco Hydro-Aeroplane Meeting.

The Monaco Hydro-Aeroplane Meeting will take place in April. M. Georges Prade, the organiser of the meeting, has written to Mr. Perrin, the secretary of the Royal Aero Club, kindly offering special facilities to members of the club on presentation of a letter of introduction from him. Members who are going over to Monaco for the meeting are, therefore, requested to put themselves in communication with the secretary at 166, Piccadilly.



M. Verrier, on the Show Maurice Farman, skims the crowd.

The Week's Work.

MONDAY, March 10th.

R.F.C., Central Flying School.—Strong West wind, misty and fine rain all day. In early morning, on Maurice Farman 418, Capt. Tucker 35 mins.; Major Gerrard with Lieut. Rathborne 20 mins., with Lieut. Marks 15 mins., with Lieut. Littleton 15 mins.; Lieut. Warter 10 mins.; Lieut. Burroughs 20 mins.

Hendon.—At W. H. Ewen School, Mr. Stewart under M. Baumann straights on 28-h.p. Caudron; Mr. Lewis Turner testing 35-h.p. Caudron, and handed over to Messrs. Zubiaga and Warren M. Marty excellent exhibition on 60-h.p. Caudron at 3,000 ft. and lost in clouds. Mr. Turner on the 60-h.p. Caudron.

At Deperdussin School.—Mr. Spratt circuits on No. 4 testing, 10 mins.; Mr. Valazzi circuits on same machine, 20 mins. and 10 mins.; Mr. Bauman rolling on Taxi 2, 10 mins.; Mr. Phelps straights, showing improvement, on No. 3 brevet machine, 40 mins.

At Blériot School.—Captain G. Cox had his first lesson on taxi; Mr. Slack trial on No. 4; M. Gandillon for eights. Lieut. Loftus Bryan did a priceless right-hand turn (his first turn) on No. 1 taxi at about 5 ft., and was surprised to learn that height was not considered an ideal one for circuits with 25-h.p. M.M. Desoutter and Clappen straights.

At Temple School, Messrs. R. Penny and D. Ritchie rolling on Blériot No. 2. Mr. A. Vaile first lesson. Mr. Temple testing Blériot, later on Caudron, taking his father for two passenger flights, and solo for 16 mins., finishing with glide.

Brooklands.—At Bristol School, wind and rain. Mr. Merriam with Lieut. Picton-Warlow.

TUESDAY, March 11th.

R.F.C., Central Flying School.—Dull, slight rain at times. Very strong west wind in forenoon, dropping to calm by noon. On Avro 404, Major Fulton 5 and 8 mins. alone, with Lieut. Conran 10 mins., with Lieut. Roupe'l 12 mins.; Lieut. Conran 10 mins.; Lieut. Read 10 mins, and 20 mins. over Tidworth

On Maurice Farman 411, Lieut. Longmore with Lieut. Bigsworth 8 mins., with Lieut Small 7 mins., with Lieut. Glanville 8 mins., with Lieut. Soames 10 mins., with Lieut. Holt 10 mins., with Lieut. Arthur 12 mins., with Air Mechanic Higginbottom 10 mins., with Capt. Vivian 15 mins.; Air Mechanic McNamara 15 mins.; Ldg. Seaman Bateman 12 mins.; Sergt. Kemper 12 mins.; Sergt. Street 30 mins. On Maurice Farman 415, Major Trenchard 15 mins. On Maurice Farman 425, Capt. Mellor 22 mins.; Lieut. Bigsworth 8 mins.; Lieut. Small 10 and 15 mins.; Lieut. Longmore with Air Mechanic Collis 3 mins. to Upavon, and Collis 4 mins. return; Lieut. Soames 9 and 14 mins.; Lieut. Arthur 17 and 22 mins.; Lieut. Holt 12 mins.; Air Mechanic Higginbottom 14 mins.; Capt. Vivian 10 mins., and in landing damaged machine. On Maurice Farman 427, Air Mechanic Collis with Stoker Vitty 15 mins.; Lieut. Glanville 11 and 32 mins.; Lieut. Holt 12 and 17 mins.; Capt. Mellor 25 and 36 mins.; Lieut. Bigsworth 14 mins.; Engr. Lieut. Randall 12 mins.

On Maurice Farman 426, Capt. Salmond 20 mins. alone, with Sergt. Mead 25 mins.; Lieut. Unwin 35 mins. (twice); Lieut. Harvey 15 mins.; Lieut. Marix 30 mins. On Maurice Farman 428, Lieut. Kennedy 12, 19, and 35 mins.; Lieut. Marix 24 mins.; Lieut. Unwin 39 mins.; Lieut. Harvey 23 mins.; Asst. Paymr. Lidderdale 20 mins. On Maurice Farman 418, Lieut. Bowhill 20 mins.; Capt. Tucker 20 mins.; Lieut. Warter 15 mins. On B.E. 417, Capt. Macdonell 23, 18, and 16 mins.; Lieut. Vernon 14 and 24 mins., Capt. Salmond 23 mins.

On Short 402, Major Gerrard with Sergt. Wright 25 mins., with Ldg. Seaman Ashton 13 mins., with Lieut. Fitzmaurice 40 mins., with Capt. Macdonell 18 mins.

Hendon.—At Grahame-White School, Mr. Birchenough at 6 p.m. on No. 7 machine straights under Mr. Louis Noël; Mr. H. T. Bayetto on Blériot mono, under Mr. Cheeseman, straights, fair progress.

At Deperdussin School.—Mr. Spratt on No. 4 testing, 10 mins.; Mr. Whitehouse on same, 10 mins., quite nice flight.



Lieut. McMullen, R.E., a new Caudron pilot.



An "impression" of M. Richet on the Bréguet.

WEDNESDAY, March 12th.

R.F.C., Central Flying School.—Very misty early, fine and sunny later. Strong easterly wind, dropping to moderate in afternoon, then dull. On Avro 404, Lieut. Conran 12 and 14 mins.; Lieut. Read 20, 25, and 30 mins.; in last flight, through misjudgment of distance, owing to clouded goggles, machine struck ground during turn, and was rather badly damaged.

On Maurice Farman 411, Engr. Lieut. Randall 20 mins.; Sergt. Stafford 15 mins.; Sergt. Street 15 mins.; Air Mechanic Collis 15 mins.; Lieut. Arthur 15 mins.; Capt. Mellor 15 mins.; on Maurice Farman 418, Major Gerrard 10 mins. alone, with Air Mechanic Sharp 15 mins.; Lieut. Littleton 10 mins.; Lieut. Marks 25 mins.; Lieut. Rathborne 15 mins.; Lieut. Burroughs 10 mins.; Lieut. Bowhill 15 mins.; Lieut. Warter 10 mins. (twice).

On Maurice Farman 426, Lieut. Kennington 14 mins.; Lieut. Marix 15 mins.; Lieut. Harvey 13 mins. alone, with Lieut. Belcher 8 mins.; Capt. Salmond with Sergt. Mead 20 mins. On Maurice Farman 427, Capt. Salmond 9 mins.; Lieut. Glanville 7 mins.; Lieut. Soames 7 mins. On Maurice Farman 428, Lieut. Unwin 10 and 30 mins.; Lieut. Kennedy 15 mins; Lieut. Marix 12 mins.

On B.E. 416, Capt. Salmond 5 mins.; on B.E. 417, Capt. Salmond 6 and 23 mins.; Capt. Macdonell 17 mins. (twice); Lieut. Vernon 20 mins. On Short 402, Capt. Macdonell 5 mins.; Sergt. Vagg then for brevet in very good style, landing close to mark.

Lieut. Boyle arrived from Farnborough in strong wind, on new Maurice Farman 431. Time 68 mins. Petrol tank had



Mr. Gordon Bell, on the 100-h.p. Deperdussin.



Mr. Spratt (instructor) and pupils of the Deperdussin School.

sprung a leak, and petrol was flowing down lower plane when he landed.

R.F.C., Farnborough.—Calm and bright. On Bréguet 210 Major Raleigh 8 mins.; Lieut. Playfair 10 mins.; Sergt. Hunter 10 mins. and 15 mins. at 3,000 ft.; Major Raleigh 5 mins.; Lieut. Playfair 10 mins.; Major Raleigh 6 mins., taking Sergt. Hunter; Capt. Beor 15 mins. at 400 ft.; Lieut. Chinnery 4 mins., straight and 10 mins. circuit at 700 ft.; Major Raleigh 5 mins., taking Sergt. Hunter, straights. On Maurice Farman 305, Capt. Reynolds 5 mins.; Lieut. Atkinson 15 mins., Capt. Pigott 5 mins., Lieut. Atkinson 12 mins., Capt. Reynolds 6 mins., Capt. Pigott 14 mins., Lieut. Atkinson 5 mins. On "B.E." 206 Capt. Reynolds 10 mins., Lieut. Joubert 10 mins., Capt. Beatty 10 mins. straights, Lieut. Christie 10 mins. straights; Mr. de Havilland out testing "B.E.'s" practically all day.

Hendon.—At Graham-White School, Mr. Birchenough with Instructor Noël at 7.40 on No. 7, and afterwards alone. Mr. J. D. North rolling on No. 7 with Instructor Manton. M. Bayetto on No. 4B mono unde Mr. Cheeseman.

At W. H. Ewen School.—Pupils out at 7.30 a.m. under Mr. L. Turner; Lieut. Usborne and Messrs. Torr and Stewart all straights. After lunch above pupils with Messrs. McGregor and Zubiaga again out. M. Marty arrived with passenger on 80-h.p. Gnome-Caudron, having flown from Paris to deliver to Admiralty. Later M. Réné Caudron made excellent solo and passenger flights on 80-h.p., showing flying of higher-powered Caudrons. During afternoon M. Marty, with Lieut. Berne, R.N., went up on 70-h.p. Caudron to put machine through Admiralty tests. Soon lost in clouds and ultimately came down at North Finchley, making good landing. Machine flown over following morning by Mr. Marty. Mr. W. Pendlebury (new pupil) joined school.

At Bleriot School.—Capt. Cox rolling on taxi; Mr. de Villiers also on same rolling. M.M. Reilly and R. Desoutter, Lieut. Loftus Bryan and Mr. Clappen straights on No. 1.

At Deperdussin School.—6.15 a.m. Mr. Spratt testing on No. 4, 10 mins.; Mr. Hudson rolling on taxi 2, 17 mins.; Mr. Bauman 35 mins. on same machine. After breakfast Mr. Spratt on No. 4, 15 mins; Mr. Whitehouse 15 mins. on same. In afternoon Mr. Spratt on No. 4, 10 mins.; Mr. Whitehouse, 15 mins.; Mr. Phelps, 25 mins. straights on No 3, much steadier on elevator, doing quite well. Mr. Hudson promoted to No. 3, straights for 25 mins.; Mr. Bauman rolling on No. 2, 5 mins., improving.

At Temple School, Mr. Ritchie 8 mins.; R. Penny 12 mins. M. Leverrier 4 mins. rolling on Blériot. Mr. Temple on Caudron two flights of 20 mins. each, and at 500 ft. for 30 mins.

Brooklands.—At Vickers School, Mr. Barnwell on No. 5

mono, testing new rev. counter. In afternoon, Mr. Barnwell on biplane with Mr. Knight.

At Bristol School, Mr. Merriam and Mr. Bendall flying to wake pupils. Lieuts. Blatherwick and Robertson-Dobie figures of eight. Mr. Merriam with Lieut. Pixton-Warlow, Mr. Bendall with Lieut. Morgan. Lieut. Pixton-Warlow alone. Later Mr. Merriam, Lieuts. Blatherwick, Robertson-Dobie, Morgan, and Pixton-Warlow all out.

Salisbury Plain (Bristol School).—Mr. Pixton on biplane. Mr. Tower on same. Mr. Jullerot on 50 h.p. tandem mono and on "sociable." Mr. Wolfrain Paschen (German Bristol pilot) excellent flight on "sociable" mono. Mr. Pixton with Lieuts. Griffiths and Broadrib on biplane. Mr. Jullerot on 50 h.p. tandem mono. Mr. Pixton with Lieuts. Read, Griffiths, and Broadrib. Lieut. Negrescu on mono. Mr. Jullerot with Capt. Landon and Lieut. Parvelescu on mono.

Bangor, N. Wales.—Nasty accident to Mr. Hamel, who happily escaped unhurt after being dropped by a "breaker" over trees.

THURSDAY, March 13th.

R.F.C., Central Flying School.—Misty early. Fine. Moderate south-westerly wind. On Maurice Farman 411, Air Mechanic McNamara went for brevet and took it in excellent style, landing within eight yards of mark first time and dead on mark second time. Sergt. Kemper for brevet on same machine, also good style, landing close to mark. Sergt. Stafford 5 mins.; Sergt. Street 20 mins. (twice); Ldg. Seaman Bateman 10 and 20 mins.; Sergt. Kemper 15 and 30 mins.; Air Mechanic McNamara 13 and 14 mins.; Lieut. Ross 20 mins.; Air Mechanic Collis with Air Mechanic Warren 23 mins., with Air Mechanic Lloyd 20 mins.

On Maurice Farman 415, Engr. Lieut. Randall 15 mins.; Master Mechanic T. O'Connor 10 mins.; Major Trenchard 15 mins.; Air Mechanic Higginbottom 10 mins.; Asst. Payr. Lidderdale 26 mins., over Lark Hill and Tidworth at 2,600 ft. On Maurice Farman 418, Capt. Tucker 15 mins.; Lieut. Rathborne 25 mins.; Lieut. Littleton 60 mins.; Lieut. Marks 25 mins.

On Maurice Farman 426, Lieut. Unwin 27 and 30 mins.; Lieut. Boyle 18 and 24 mins.; Lieut Marix 30 and 37 mins.; Lieut. Harvey 27 mins.; Capt. Macdonell 12 mins.; Lieut. Kennington 16 mins.; Capt. Salmond with Lieut Thompson 24 mins., with Sergt. Mead 40 mins. On Maurice Farman 427, Lieut. Small 15 and 12 mins.; Capt. Salmond 15 and 16 mins.; Lieut. Glanville 13 and 18 mins.; Lieut. Bigsworth 20 mins. (twice); Lieut. Soames 13 and 17 mins.; Lieut. Holt 16 and 27 mins.; Lieut. Arthur 20 mins.; Capt. Mellor 15 and 25 mins.; Lieut. Conran 8 mins.; Lieut. Longmore with Mr. Dobson, Meteorological Officer, 13 mins. On Maurice Farman 428, Lieut. Kennedy 21 and 10 mins.; Capt. Macdonell 22 mins.; Lieut. Unwin 20 mins.

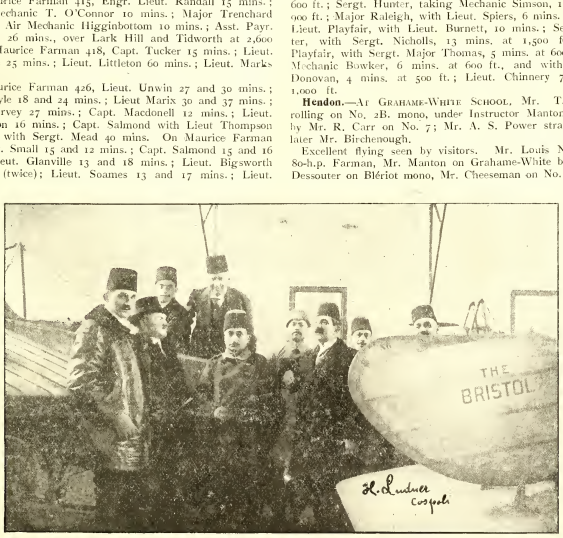
On B.E. 416, Lieut. Vernon 20 mins.; Capt. Macdonell 5 and 30 mins. On B.E. 417, Capt. Salmond with Air Mechanic Copper 18 mins. on practice ground, with Lieut. Harvey 30 mins. with Lieut. Kennington 25 mins., with Lieut. Unwin 17 mins., with Lieut. Marix 49 mins., with Lieut. Boyle 25 mins., with Lieut. Dawes 43 mins.; Capt. Macdonell 15 mins.

On Short 402, Major Gerrard with Sergt. Spencer 15 mins., with Lieut. Fitzmaurice 5 mins., with Sergt. Wright 8 mins., and 13 mins. alone; Sergt. Spencer 9 and 30 mins.; Lieut. Fitzmaurice 15 and 20 mins.; Capt. Macdonell 12, 23 and 25 mins.

R.F.C., Farnborough.—Quite calm and bright; some good flying. On "B.E." 206, Lieut. Joubert 10 mins. circuits and 5 mins. straights; Capt. Beatty 15, 20, and 13 mins.; Lieut. Joubert 10, 15, and 20 mins. at 2,000 ft., making fine spiral. On Maurice Farman 305, Capt. Reynolds 8 mins., Lieut. Atkinson 6 and 20 mins., Capt. Reynolds 8 mins., taking Capt. Darbyshire at 500 ft.; Capt. Pigott 10, 12, and 10 mins. at 1,000 ft.; Lieut. Gould 12 and 18 mins. at 1,000 ft.; Capt. Reynolds 17 mins., Capt. Pigott 10 mins. On Bréguet 210, Lieut. Playfair 12 and 5 mins. at 1,600 ft.; Capt. Beor 5 mins. at 2,000 ft.; Lieut. Chinnery 16 mins. at 1,400 ft.; Lieut. Playfair 10 mins. with passenger, Capt. Grant, at 1,600 ft.; Sergt. Hunter 17 mins. at 1,800; Capt. Beor 5 mins. at 200 ft.; Lieut. Playfair taking Mechanic Judge 5 mins.; Major Raleigh with Capt. Green 8 mins. at 600 ft.; Sergt. Hunter, taking Mechanic Simson, 12 mins. at 900 ft.; Major Raleigh, with Lieut. Spiers, 6 mins. at 800 ft.; Lieut. Playfair, with Lieut. Burnett, 10 mins.; Sergt. Hunter, with Sergt. Nicholls, 13 mins. at 1,500 ft.; Lieut. Playfair, with Sergt. Major Thomas, 5 mins. at 600 ft.; with Mechanic Bowker, 6 mins. at 600 ft., and with Mechanic Donovan, 4 mins. at 500 ft.; Lieut. Chinnery 7 mins. at 1,000 ft.

Hendon.—At Grahame-White School, Mr. T. Bayetto rolling on No. 2B. mono, under Instructor Manton, followed by Mr. R. Carr on No. 7; Mr. A. S. Power straights, also later Mr. Birchenough.

Excellent flying seen by visitors. Mr. Louis Noel flying 80-h.p. Farman, Mr. Manton on Grahame-White biplane, M. Dessouter on Blériot mono, Mr. Cheeseman on No. 7. Mr. P.



Sundry Turkish officers and officials of high rank with their Bristol monoplanes.

Verrier was flying Farman biplane, M. Réné Caudron, and Mr. L. Turner on Caudron biplanes, the whole making a splendid afternoon's exhibition.

At W. H. Ewen School.—Pupils out at 8.45 a.m. All pupils were out under Mr. L. W. F. Turner and M. Baumann. Mr. Turner on 5-h.p. Caudron, handed over to Lieut. Usborne and Messrs. Torr, Stewart and Warren. M. Baumann on same machine at about 150 ft., got into bad remou and banked almost vertically. Machine rolled back comfortably, and pilot continued flight. Pupils also busy on 28-h.p. Caudron under M. Beaumann, Messrs. Stewart, Zubiaga and McGregor fine straights.

After lunch all again out. Mr. L. W. F. Turner on 60-h.p. doing exhibitions.

During morning M. Réné Caudron, with Paymaster Berne, R.N., flew 70-h.p. Caudron through height test for Admiralty. Lost to view in clouds, but with true homing instinct found way back, landing with perfect glide from 3,200 ft. Immediately after, M. Caudron and Lieut. Spenser Grey, R.N., were out on the 80-h.p. Caudron doing attractive exhibition work. Later, M. Caudron put same machine through climbing tests with Paymaster Berne, R.N. Rising to 3,400 ft. in 12 mins., he descended to 600 ft., putting machine through some pretty flying. M. Marty, accompanied by Lieut. Usborne, R.N., as observer, then put machine through hour's test with ease.

At Deperdussin School.—At 9.5 a.m. Mr. Phelps on No. 3, 4 mins., left landing too late, dived without flattening out and smashed both wings and several struts. In afternoon Mr. Spratt, 7mins., testing on No. 4. Then Mr. Valazzi three good turns on same machine, of 10, 11, and 19 mins. each. Mr. Whitehouse then did a nice 23 mins. flight over surrounding country.

At Blériot School.—Eight pupils out. M. Gandillon had bad luck when going for brevet, as he had to make a descent en vol plane from 100 ft. owing to engine trouble, but made excellent landing. Lieut. Loftus Bryan and Messrs. Reilly, Desoutter and Clappen, Capt. Cox, Mr. Williams, and Mr. de Villiers also out. Mr. Harold Lane joined school for superior brevet.

At Temple School, on Blériot, Mr. Penny 16 mins.; Mr. Ritchie 12 mins.; M. Leverrier 20 mins. rolling. Mr. G. Temple out twice on Caudron at 500 ft., and later at 750 ft. for 30 mins.

Brooklands.—At Vickers School, Mr. Barnwell on Farman during afternoon, but too bumpy for pupils.

At Bristol School, Mr. Merriam test with Lieut. Blatherwick; Mr. Bendall with Lieut. Robertson-Dobie. Each pupil then alone.

Salisbury Plain (Bristol School).—Mr. Pixton trial on mono; Mr. Tower on biplane; Lieuts. Broadrib and Griffiths with Mr. Pixton. Two excellent solos by Mr. Paschen on 50 h.p. mono. Mr. Pixton with Lieut. Parvelescu.

Brighton-Shoreham.—At Avro School, in evening Mr. Simms testing school machines, but wind too bad for pupils. Mr. Hans Rolshoven rolling first time.

FRIDAY, March 14th.

R.F.C., Central Flying School.—Very strong south-westerly wind. Very dull. Misty and fine rain. No flying.

Brighton-Shoreham.—At Avro School, in morning, Mr. Simms testing; afterwards Messrs. S. Gaskell, Wynne-Roberts and Rolshoven practising.

SATURDAY, March 15th.

R.F.C., Central Flying School.—Very strong south-westerly wind. Heavy snow and rain storms. No flying.

Hendon.—One daring flight in gale by M. Verrier on Maurice Farman with M. Richet as passenger.

SUNDAY, March 15th.

R.F.C., Central Flying School.—Very strong south-westerly wind. Dull.

Brooklands.—Usual astonishing flights by Mr. Hamel.

Hendon.—Extraordinary flying in gale by Messrs. Manton (G.-W. biplane), Chevillard (Henry Farman), Noël (Henry Farman), Verrier (Maurice Farman), Marty (Caudron biplane).



Mr. Barnwell returning to Brooklands on "Vickers V."

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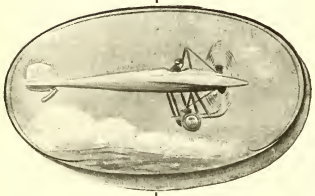
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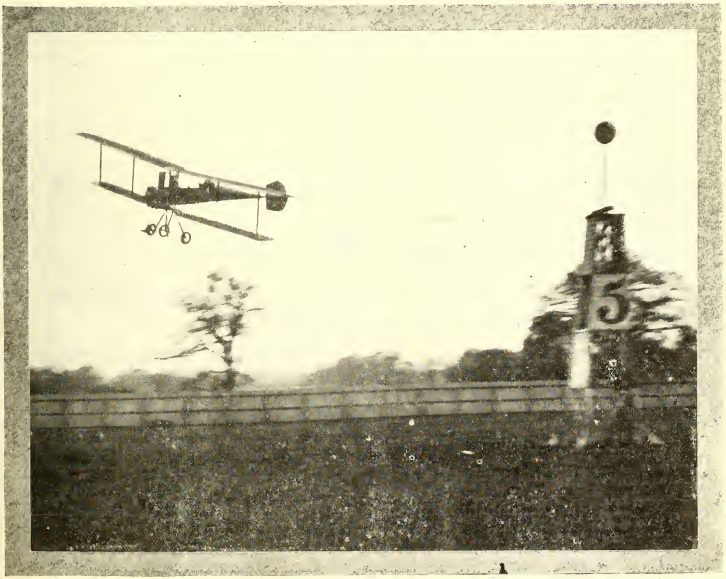
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Edited by C. G. GREY. ("Aero Amateur")

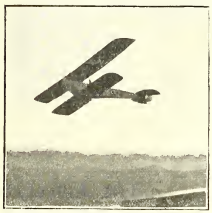
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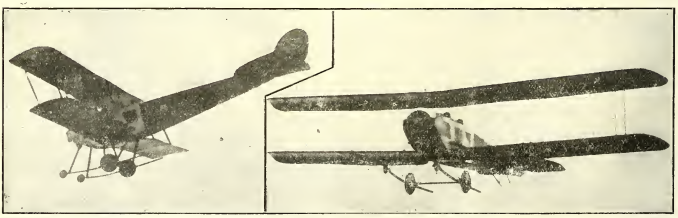
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Explanations.

"Quos Deus vult perdere, prius dementat."

There exists a peculiarly malignant disease—a species of softening of the brain—which is known to medical men as "general paralysis of the insane," or more colloquially as "G.P.I." Some of the older members of Parliament will remember with pain a ghastly moment when one of the most brilliant of their number, one who had held high office under the Crown, broke down suddenly in the midst of an impassioned speech, and thereafter faded quickly into the later stages of this fell disease, to die a pathetic imbecile only a few years later.

The earliest symptoms of this mental state are that the victim sees everything on a huge and elaborate scale. He is elated with the apparent success of everything he does. All his geese are swans. No criticism affects him. All his schemes seem to him of huge dimensions, and even the most obvious evidence of their failure only inspires him to higher flights of fancy and greater volubility. Everything is seen through magnifying glasses. He radiates the rosiest optimism. All is for the best in this best of all possible worlds.

When one sits down soberly and coolly to consider the present position of our aerial defences and studies the facts in relation to what we are asked to believe, one becomes gravely concerned for the mental state of the Minister who has boasted that he is responsible for that position. A member of Parliament of great promise, in many ways a brilliant politician, one who has worked his way to high place by pure mental agility, he is but a young man for his position, and is, one fears, so overweighted by the responsibilities of his office that he is unable to stand the strain.

Those of us who are at all in touch with Service matters hear from time to time that the pressure of work in the office of the Secretary of State for War has been so great that affairs of the utmost urgency are being dangerously delayed, and that the chaotic muddle there far surpasses anything known in any previous administration. Thus one is tempted to assume, with the deepest regret, that Colonel Seely, to whom we are primarily indebted for the formation of the Royal Flying Corps, and who was at heart earnestly desirous of producing a sufficient aerial defence force, is breaking down under a task which is too big for him.

By hardly any other possible explanation can one account for the astounding statements made by him when introducing the Army Estimates on Wednesday of last week. From start to finish, his speech, so far as aviation was concerned, was such an astonishing fabric of distorted facts that one could not imagine a responsible Minister with any knowledge of the truth giving utterance to it; nor can one imagine any sane man so wholly ignorant as to believe the majority of the statements if they were dished up for him in that form by subordinate officials. It is only charitable to assume that Colonel Seely "knew not wherref he spake," and one fears that one must regard him in future with deep sorrow as one of the "afflicted of God," cherishing as a fond memory the good and brave work he did in the formation of the Royal Flying Corps, when he practically threatened his resignation unless the Treasury provided adequate funds for the purpose of placing the force on a satisfactory footing.

There are, however, those who may not be able to take this charitable and sympathetic view of the unhappy Minister's state, and may accuse him of distorting facts for political ends, so for their sake it is necessary to controvert and explain the chief mis-statements made by him, though it is far from pleasant to be compelled to show how far it is possible for the representatives of the people to be misled and still believe the truth of what they hear.

Party Politics.

Not the least unpleasant feature of this tragic occurrence is the fact that aerial defence has become a phase of party politics. I am not a Conservative, nor am I a Liberal, but I am compelled to admit against my will that national defence in general and aerial defence in particular seems to have become entirely the concern of His Majesty's Opposition. On the fatal Wednesday night the Government benches cheered Colonel Seely's wildest statements with enthusiasm, and jeered at the mild protests of the Opposition. The Liberal papers have all along either maintained silence or openly flouted the idea that aerial defence is a serious matter, and even one group of papers, which has undoubtedly done much to stir up public interest in flying, and had pressed for proper provision for the air corps right up to the day of the unfortunate Minister's statement, suddenly shut down on the subject on Thursday morning and tacitly accepted his facts, merely saving themselves from becoming ridiculous by inserting a short note that some of the figures might be open to question. The chameleonesque performances of these papers in relation to their political colour is notorious, but one had hopes that there was at least in their vagaries a sound, if flexible, patriotic backbone; and one would, at any rate, expect those in control to realise the necessity for adequate protection for their own vast wealth.

The good, staid, case-hardened Conservative papers alone seem to have realised the gravity of the situation, and they have said so in surprisingly outspoken terms, though, as is natural, after all, they blame the afflicted Secretary for War instead of pitying him.

A Gentle Contradiction.

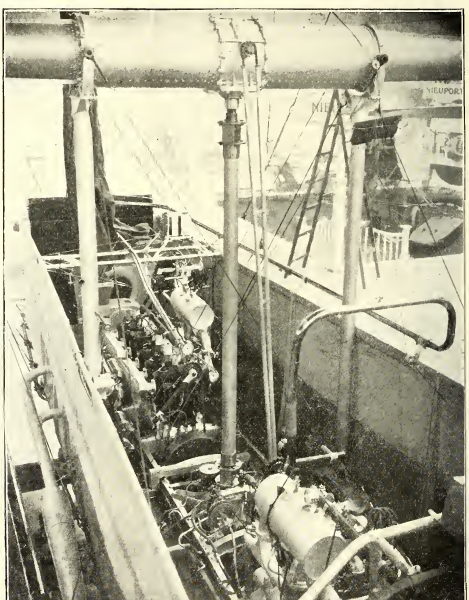
Unfortunately Colonel Seely's statement is too voluminous to reproduce verbatim, but most of it has appeared in the daily papers, and I therefore propose only to deal with the figures used by this unhappy gentleman in supporting mis-statements he made under the delusion that he was setting forth facts. But first I must controvert the statement that any misapprehension of our condition with regard to aviation exists. Colonel Seely said, "First, the officers engaged in the dangerous business of flying have made it a point of honour that they will never allow any of their

performances to appear in the Press." This implies a special arrangement between the various Army pilots. Such an arrangement cannot exist, as the situation is already covered by the King's Regulations, but it is interesting to note that officers have recently been warned to keep their mouths particularly shut. Even so, good performances cannot "pass absolutely unnoticed," as, for example, Captain Becke's flight to Plymouth and back, and the magnificent if foolishly conceived flight to Montrose by Captains Becke, Dawes, and Longcroft, and Lieutenants Waldron and Herbert.

The unfortunate gentleman continued—"The second reason is that the whole business is in itself, and ought to be, highly confidential. If anyone tries to find out what foreign countries are doing about aviation he will find himself immediately confronted with a blank wall." (N.B.—Unless he reads the Press of the country concerned.) "We have also endeavoured to prevent other people finding out what we are doing, and in this matter we have received assistance, which I take this first public opportunity of acknowledging, from the whole Press of the United Kingdom, who have refrained from publishing matters of great importance which it was obviously proper to keep secret in the interests of the State. I do not desire to deal further with the negotiations which led up to this highly satisfactory state of affairs."

This, of course, is pure "eye-wash." Naturally any decent paper will refrain from publishing matters of genuine importance which may be of use to foreign Powers, but I personally have not come across any of these "negotiations," nor have any of my friends on other papers. There has certainly been a feeble attempt to muzzle certain people who have been too outspoken about the present disgraceful state of affairs, but except in certain papers under Government control it has not succeeded. The chief reason why so little is made known to the public is simply that the editors of daily papers are not interested. Anyone can go and walk or drive on the road through the Central Flying School, or beside Laffan's Plain or Lark Hill, and see for themselves just how much flying is done and how good or bad the machines are. All this talk of secrecy is but another pathetic symptom, analogous to the mental state of persons suffering under the delusion that they have vast hoards of wealth which they constantly fear will be stolen.

One may rest assured that every foreign Government knows far more about our non-existent aerial defences than do British people, including Colonel Seely, and it is in the hopes of waking our people up that I continually publish facts concerning the machines we do happen to possess. Others agree with me, as witness the remarks of Major Sykes, Commandant Military Wing, R.F.C., at the end of his lecture at the R.U.S.I. Commenting on the need for the solid backing of consistent popular opinion he said: "We cannot do without it in this country. With it we can and will take the foremost place in the air as now on the sea. All rests eventually on the public. It must not be allowed to shirk its responsibility. Information as regards developments in aircraft designs and employment by land or sea, progress in the formation and training of the Royal Flying Corps, lessons learnt in aerial reconnaissance, meteorology, wireless, and the vast number of other kindred subjects must be put in their possession." Major Sykes is right. What is wanted is an officially instigated educational campaign, not a muzzling order for critics. Our safeguard is to show how strong we are, not to hide our weakness behind a transparent screen of bluff. But the two quotations above demonstrate how little Colonel Seely is in agreement with the very men about whom he babbles so amiably.



Colonel Seely's Secret.—The swivelling propeller gear of the Army air-boats.

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A Few Figures.

The afflicted Minister's megalomania is shown in the statement that when he brought the R.F.C. into being on May 13th, 1912, it comprised 12 flying officers, whereas now its total strength is 123 flying officers. "Flying officers" is an official grading, and not more than 12 have been appointed to the three squadrons existing on paper, the rest are merely attached on probation, or are appointed to the R.F.C., but not allotted to any squadron, and consequently do no flying. He stated that 55 have passed the highest test (i.e., the Central Flying School examination). Then the balance must be merely holders of Royal Aero Club Certificates, and though some are good fliers already, some are very bad indeed. Colonel Seely said that this "highest test" is one "more exacting than that asked for from any flying officer in any part of the world." This statement is a pure effort of imagination. I grant readily that the training at the Central Flying School is more thorough than that at any school within my knowledge, but the final flying tests are not in the same class with the tests for the French Military Brevet, nor are they as severe as those for the Royal Aero Club Higher Certificate, which so few pilots have taken.

Dirigibles.

On the subject of matériel, Colonel Seely was even more astounding, though on the matter of dirigibles he showed a glimmer of common sense. Certainly the Zeppelin class is more a naval than a military vessel, and for colonial wars, such as we may have in Nigeria, East and South Africa, and in Persia, for example, where we must fight sooner or later, a 45 m.p.h. airboat of "Delta's" size and speed would do good service. But we need a dozen "Deltas," not one or two.

Hereabouts Colonel Seely delivered himself of this statement, "These dirigibles, I say without hesitation —and all who understand the matter will agree—are superior to any other kind of portable airship." —(Portable airship is good.)—"They have various mechanical advantages, which I do not wish to dwell upon, because those concerned believe the secret is our own, enabling them to rise more rapidly in the air, and enabling them, above all, to avoid having to part with hydrogen when they rise, and therefore there is no necessity for re-enforcing that hydrogen when they fall." The secret, known to everyone but Colonel Seely himself, is the swelling propeller shaft, "adopted" by the R.A.F. from Mr. Willows without acknowledgment, and in spite of his having patented it. The idea is excellent, and was shown in operation on the "Delta" at Olympia. All this chatter about secrecy would be ludicrous if it were not so painful, coming as it does from a responsible minister.

Colonel Seely's chief objection to Zeppelins abroad is the difficulty of providing hydrogen. It is forgotten that a couple of small collapsible ships constantly deflated and inflated would use more gas in a three months' campaign than one Zeppelin would need for replenishment. The real difficulty with a Zeppelin in the field is the number of men needed to handle her.

Aeroplanes.

It was when he arrived at the subject of aeroplanes that the Secretary for War really dumbfounded his hearers by his audacity in mis-statement. "Last year," he said, "we had 17 aeroplanes, but to-day we have in possession of the War Office 101 capable of flying so far as we can decide." It is such an astonishing figure that even those who expected ordinary exaggeration were driven into half believing the statement simply because they could not understand a man in his position going so far from the truth.

Let me explain, therefore, roughly, one method by which the figures may be reached.

Effective biplanes with squadrons 2, 3, and 4 (approximately)	10
Damaged biplanes belonging to same squadrons (approximately)	10
Central Flying School, effective machines (approximately)	15
Central Flying School, repairs and wrecks (approximately)	15
Monoplanes (under alteration, wrecked, or delayed) (approximately)	20
New machines just delivered at R.A.F. (Perhaps!) (approximately)	10
Secondhands bought; "taxis"; "box-kite" biplanes; and machines earmarked for service (approximately)	20
Approximate total	100

The last item is due to a census of privately-owned aeroplanes taken recently. Some few of these have been bought outright, and others apparently "earmarked" for use if required.

By juggling with figures one can arrive at much the same total in half a dozen other ways, and one need not overstrain one's conscience particularly in doing so, for, kindly observe, the phrase is not "ready to fly," or "in flying order," or "available for immediate service," but simply "capable of flying." Now almost anything is "capable of flying" if enough work is done to it. For example, one of the two Neuports which was shown last week in that much-appreciated photograph taken in the Royal Aircraft Factory only needs an engine, a chassis, an empenage, a rudder, elevators, a pair of wings, sundry wires, control gear, tanks and instruments to be capable of flying within the meaning of the Act. Similarly, the Farmans and the Bréguets with which two officers had slight contretemps not long ago would be quite capable of flying after certain repairs to the engines and the fitting of new fuselages, wings, stanchions, chassis and tails. The landing wheels and the control levers were hardly damaged at all.

The next juggle with figures is that in which our hypothetical hundred machines is stated to be four times as numerous in proportion to our mobilised Army as are Germany's moderately estimated 150 aeroplanes to her army. Supposing the wrecks to be rebuilt by the R.A.F., we have 100 machines to the 170,000 troops in our Expeditionary Force, whereas it is demonstrated that Germany has a paltry 150 aeroplanes to an army of anything over 4,000,000. Very pretty reasoning, but a trifle unconvincing when one considers that we need an aerial defence force in proportion to our wealth and population, and not to our toy Army. And, anyhow, Germany is merely starting with 150 to our 25 serviceable machines (squadrons and school), and she has a few quite useful airships as well for the nucleus of a fleet.

The Best Aeroplane in the World.

Next comes the statement that we have "evolved a type which is far superior to that in possession of any nation in the world," accompanied by fulsome praise of the Royal Aircraft Factory, and all because a "B.E." has shown a speed range of 40 to 80 m.p.h., "a thing believed to be incredible six months ago." That is nothing wonderful. It is largely a matter of Mr. de Havilland's excellent flying. But, apart from that, the new Sopwith tractor with a less powerful engine gets off at about 30 m.p.h., flies at a maximum between 72 and 75 m.p.h., and lands somewhere much nearer 20 m.p.h. In spite of this, I do not think Mr. Sopwith claims to have "the best brains in England" at work on it. Also, if my memory is right, the Cody was timed officially at 30 to 72 m.p.h. in the Military Competition, and the Flanders monoplane did even a lower speed with a maximum of, I think, 67 m.p.h.



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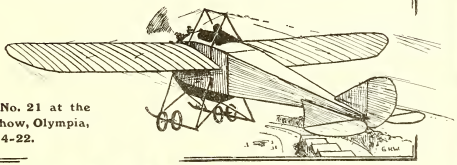
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—to fast Monoplanes

Then, after stating that "a biplane is supposed to be a slow machine"—which is only partially true—Colonel Seely announced that we have a biplane which, on the previous Monday, "reached 91.4 miles an hour, flying backwards and forwards, with and against the wind. That means that this machine attained a speed in still air, allowing for turnings and so forth, of 100 miles an hour." Now, if the machine was timed in the usual way over the R.A.F. course with and against the wind, its mean speed would be 91.4 m.p.h., which is actually its speed in still air; and it certainly never did 100 m.p.h., including the turns. The machine in question is a very pretty little biplane, not much bigger than a Cauldron, and with a very small chord. It is fitted either with a 100-h.p. or 160-h.p. Gnome—I have been told both, but the more reliable evidence is in favour of the former. It is a light single-seater, very fast, and is said by good judges to be very unstable. Anyhow, it is nothing phenomenal, because the 140-h.p. monocoque Deperdussin has done 105 m.p.h. round a circular course; several 100-h.p. Nieuports have done well over 100 m.p.h. round circular courses; the latest Blériot far exceeds 100 m.p.h., and at least a dozen machines in France have beaten 90 m.p.h. with engines of 100 h.p. or less. Besides which Brookins on a Wright Biplane flew a complete lap at 99 m.p.h. in 1910.

After letting it be understood that these two wonderful machines were built by the stipendiary geniuses of the Royal Aircraft Factory, Colonel Seely, without stating that any other make was used, went on to relate how a naval officer at the Central Flying School went up in such a wind that his 57-m.p.h. machine rose vertically to 300 ft. and took 16 minutes to cover 400 yards. He stated that a year ago people hesitated to go up in 15-m.p.h. winds. Now, without in the least wishing to detract from the fine performance put up by Lieut. Longmore, R.N., and the Maurice Farman, to which Colonel Seely doubtless referred, it may be well to remember that, in 1909, the late Hubert Latham flew an Antoinette in a 40-m.p.h. wind, and that, in 1911, Brookins and Johnstone, two Wright pilots, both went up in such a wind that they landed one 12 and one 20 miles *behind* their starting point, after flying head to wind for an hour and more. Many of us have seen Mr. Desoutter and Mr. Hamel, on 60-m.p.h. Blériots, standing still against the wind, and M. Verrier, on the Maurice Farman, seems rather to like doing it.

The next R.F.C. marvel was the feat of an officer who took 1 hour 15 mins. to cover 21 miles, and came back in 11 mins. 56 secs. A plucky flight; but so long ago as 1911 Mr. Oscar Morison covered the 21 miles and something over from Hendon to Brooklands in 12 minutes, and only last Sunday M. Verrier flew his Maurice Farman from Farnborough to Hendon—31 miles—in 19 minutes. Apart from this, M. Gilbert, about a fortnight ago, flew on a Clément Bayard monoplane a distance measuring between 135 and 140 miles in 60 minutes, with a gale behind.

An Unfortunate Slip.

Finally, we come to the most damning figure of the lot. Evidently feeling immensely pleased with himself, the unfortunate Minister stated that, since the formation of the R.F.A., May 13, 1912, "the machines have flown for 1,550 hours, and 82,000 miles have been flown by these officers who are engaged either in learning to fly or in conducting these experiments." Apparently forgetting this a minute or two later, he said "If you take the Central Flying School, there have been 670 hours flying since last August, and over 36,000 miles have been flown." Compare the figures, and you find that since August the C.F.S. has done a little less than half the total flying of the whole Army. If one deducts the ordinary mileage covered by Mr. de Havilland in "conducting experiments," the C.F.S. has probably covered fully half the total mileage. Now, we happen to know that the C.F.S. hardly ever has more than 12 machines in flying order at a time, so that it looks rather as if my estimate of 12 flyable machines for the rest of the Army is fairly near the truth, even accepting the official figures as accurate and making Colonel Seely a present of the flying time between May 13th and August, when some excellent flights were made by officer-pilots at Lark Hill, who have done no flying since for lack of something to fly.

The Engine Prize—A Warning

The announcement was made that the Admiralty and the War Office will together offer a prize for the best aeroplane engine—"a prize something in four figures—and to give a promise of the purchase of not less than fifty, or possibly more, engines from either the successful competitors or from one of the competitors." If I am not much mistaken, this very sensible idea emanated from the Navy, and it is an excellent proposal. Only, I warn would-be competitors be careful to get everything possible as to conditions of tests, specifications required, measurements desired, and type of engines preferred in writing before stirring a hand's turn towards preparing for that test. And pay no attention to that delusive "possibly more."

We have had a good deal of that kind of thing in the past. Though the Right Honourable the afflicted gentleman may not remember it, he spoke a year ago of the "necessity for the fostering of a healthy industry," but here we have him, on March 10th, saying "I have indicated that we have, in our judgment, the best aeroplane in the world which we ourselves have devised and can manufacture in any number that we please."

I was unaware hitherto that Colonel Seely included himself among the staff of the Royal Aircraft Factory, but since he has said it, let it be so. At any rate, now we know where we are so far as the present head of the War Office is concerned. Let us pray for an early deliverance, and meantime turn our attention to studying the needs of the Navy. In that direction there is greater scope, and, at any rate, one is dealing with men who know what they want and go the right way to work to get it.—C. G. G.

The Royal Aero Club.

The Annual General Meeting was held on Wednesday, March 19th, Mr. Roger Wallace being in the chair, in the absence of Sir Charles Rose. As the result of the election for the Committee, Captain Bertram Dickson goes off, and Mr. Bucknall goes on.

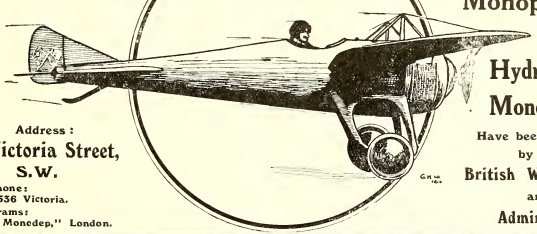
The apathy of the Government was the subject of strong animadversion. Mr. Garvin Ralston spoke strongly on the subject of the Government's tardiness in developing aviation in the Services. It was a pressing need, he said, that the Government should be forced to move in the matter, and in order that the public should be aroused to the situation he proposed that the committee should consider the advisability of arranging a large meeting—at the Albert Hall, for example—to be addressed by the leaders of the movement. This was seconded and carried.

The report and balance-sheet were passed, the Chairman remarking upon the extraordinary compliment paid the Club by the fact that the Government left the preliminary passing of aviators to them, as an outside body, Service men being obliged to possess the Royal Aero Club certificate.

Referring to Colonel Seely's complaint that he could not get delivery from the manufacturers, Mr. Wallace said that the fault was that of Colonel Seely himself, as he did not give orders early enough. It was unreasonable to expect manufacturers to be ready to supply aeroplanes at a moment's notice.

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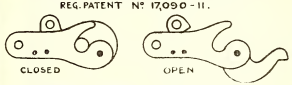
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The Army Estimates and Aviation.

BY W. E. de B. WHITTAKER.

The Secretary of State for War was recently a guest of the Royal Aero Club. In accordance with custom he made a speech. He spoke as an apologist for the policy of his Majesty's Government. That such an apology was necessary he apparently recognised with some clearness. And he stated definitely that he alone was responsible for the delay in bringing the Royal Flying Corps to a state of efficiency. It is well to know on whom one may place the blame.

In examining the provision made for this Service in the Army Estimates one has to recollect that any grant of money to the aeronautical section of the Army is not a mere maintenance allowance, increasing annually to keep pace with the normal growth of the Service, but almost a capital sum necessary for the creation of an adequate corps. Much has been done during the year so far as the covering of innumerable sheets of paper is concerned, but of actual work the record is meagre.

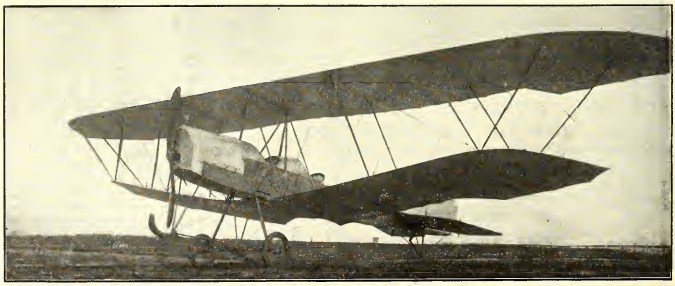
When in the spring of last year Colonel Seely first propounded in a Memorandum of quaint style and curious idiom the main points of his scheme for the formation of the Royal Flying Corps, none doubted that at last a move of some magnitude was to be made. It was laid down officially that the Royal Flying Corps was to be of seven squadrons of twelve aeroplanes each, and an airship squadron of indefinite strength. By most people this was regarded as a preliminary establishment to be formed during the financial year (1912-13), and not as in any sense permanent in size or plan. Such certainly was the impression conveyed by the Secretary of State for War, whether he intended to do so or not. Yet now, at the beginning of the next financial year, we are calmly informed that "the fifth and sixth squadrons will be raised in the course of 1913-14," leaving two to be formed in the distant future. It will thus be seen that, even from Colonel Seely's point of view, the money devoted to aviation is largely in the nature of capital expenditure, and ought to be correspondingly higher than in normal times.

Before his figures can be criticised it is necessary to be satisfied as to the truth or otherwise of his statement as to the number of aeroplanes in the possession of the Royal Flying Corps. In another part of this paper Mr. Grey deals with the question in such manner that it is unnecessary to duplicate his arguments. It is sufficient to say that the three aeroplane squadrons stated officially to be up to establishment are not equipped with the proper number of reasonably efficient aircraft. And there is no effective reserve, though the machines in use at the Central Flying School could be employed in case of emergency.

The total sum devoted to aeronautics in the Army Estimates is declared by Colonel Seely to be £501,000. Last year Colonel Seely announced that the provision made amounted to over £309,000. If any proof is required of the general dishonesty of his policy it should be noted that he refers in his present memorandum to last year's vote as £218,000 (having subtracted the £90,000 devoted to the purchase of land) in order that he may show a fictitious increase of over a quarter of a million pounds. Thus is the general public misled as to national expenditure. An officer of State who is capable of so mean a subterfuge is unworthy of trust in any matter.

The two great requirements in the aeronautic Service are aeroplanes and mechanical transport. In order to arrive at the figure devoted to such matériel it is necessary to eliminate all other charges. I will quote Colonel Seely's own figures. To Army personnel and kindred items he devotes £150,500. The staff of the Central Flying School receives £18,500. A further sum of £72,000 covers all the estimated building operations for the year. Thus, a sum is left of £285,000, allotted to the purchase of "aeroplanes, mechanical transport, stores and materials." An examination of the different items of which this figures is composed is an excellent illustration of the misleading nature of a general statement. Under "Vote 9 (Armaments, Aviation, and Engineer Stores), Section P—Aviation," will be seen a rough division of the major part of the whole sum. I insert it here :

	£
Aircraft Factory staff—	
Superintendent	1,400
Assistant superintendent	400
Three assistant engineers	1,300
Wages	40,300
Health and unemployment insurance, payments for civilians	600
Stores and materials	190,000
	£234,000



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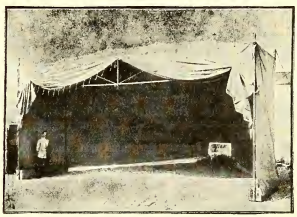
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The remaining £51,000 is, apparently, the sum devoted to the purchase of mechanical transport for the squadrons and the depôt. If so, it is possibly an adequate sum.

Examination of the above figures reveals the fact that, out of a vote ostensibly devoted to the purchase of matériel, £43,500 is set aside for the payment of personnel, leaving £190,000 for stores, etc.

The experiments made in ostentatious "secrecy" at the Aircraft Factory are to be paid for out of the £190,000. The Factory has a varying income derived from the carrying out of repairs for the Military Wing, but the money received in this way comes initially from the aviation vote, and does not represent an increase. Not less than £100,000 will be spent, or wasted (according to one's opinion), by the Factory on experimentation that they may produce machines equal to those of manufacturing firms dependent on the receipt of orders for their prosperity. We need, whatever may be done by optimistic officialdom, to purchase at least one hundred aeroplanes during the year. Yet in what way is it possible out of the money provided? The most ingenious mathematician by the most wonderful juggling with a series of involved figures cannot produce more gold than is already in being, and the most complacent of inefficient politicians cannot make money by the utterance of ceaseless pleasant verbal inaccuracies.

The establishment of the Royal Flying Corps as laid down in "Peace Establishments, Part I, 1912-13," was 77 officers, 10 warrant officers, 543 N.C.O.'s and men. Yet its strength, as shown in the latest issued table of regimental strengths, appears as 21 officers, 4 warrant officers, and 213 men. Since then there has been an increase, but not up to strength. At the end of the financial year the corps is not up to establishment. The Secretary of State for War says that "difficulties have been experienced in obtaining a sufficient number of skilled mechanics," and yet the establishment is to be nearly doubled in size during the next twelve months.

None objects to this increase, for it is naturally a great necessity; but one cannot help fearing that it will be carried out on paper only. It would be in keeping with the general policy of the War Office in aeronautical matters if the only adequate and proper allowance in the aviation vote were not spent by the end of the financial year, owing to the continuance of the present system of delay and muddle.

It is indeed difficult to deal with estimates which one cannot believe are serious, with figures which do not represent the intentions of the Government. Page after page might be written dissecting the various items of the aeronautical estimates, but of what use is it to dissect unrealities? All that we know definitely is that the existing personnel is paid the sums of money stated in the Estimates, and that, from a financial point of view, it is better to be a civilian if one accepts employment under the War Office.

There is but one bright spot in the Estimates. The Central Flying School is well equipped, and its staff is efficient and is adequately paid.

In the political history of Great Britain there have been many failures. In the majority of cases there has been something of greatness in the fall of a Minister of State. Strafford failed nobly, St. John had nothing little in his character. Of recent years, Robert Lowe Viscount Sherbrooke failed, but it was the failure of a brilliant, honest man. Rarely, indeed, has English history seen such a spectacle as is now visible to all. An inefficient Minister tottering to his fall, vainly endeavouring to veil his hopeless incapacity by mean subterfuge and undignified evasive rhetoric. He is nearing the day when he will find it necessary to go into ignoble retirement unregretted by one single soul of those who saw his rise a few brief years ago on the notoriety obtained by his desertion of the party which gave him his first opportunity in political life.

Naval and Military Aeronautics.

FRANCE.

On March 16th Lieutenant Aviator Le Bihan (8th Infantry) flew on a Caudron hydro-aeroplane (70-h.p. Gnome) belonging to the Army, from Croisy to Boulogne over the sea. He was accompanied by a mechanic. Several descents were made on to the water with perfect success. This is the first flight made officially on a military hydro-aeroplane. Lieutenant Aviator Gerard, with Sapper Jacquemart as passenger, flew on a 70-h.p. Gnome Caudron in company with the former machine.

The Artillery aviation experiments at the Camp de Mailly have again begun. The Belfort escadrille of six tandem two-seated Blériot monoplanes (80-h.p. Gnome engines), and four single-seaters, with Lieutenants Jacquet (commanding), Boucher, Gaubert, and Trétarre, Sergeant Caran and Sapper Blaignan as pilots, are all employed. During the last fortnight many flights have been made over batteries at gun practice with artillery officers as observers on the two-seaters. Despite the heavy, variable weather, which required a different allowance for wind in sighting almost every few minutes, there was not a single day on which the aviators did not fly. So far, the experiments have been highly satisfactory.

Naval Lieutenant Héretier has embarked on the armoured cruiser, "Edgar Quinet," with a complete military kite outfit. The "Edgar Quinet" will be at Salins d'Hyeres about April 2nd, after which date a series of kite experiments will be made.

Despite the recent bad weather Lieutenant Aviator Romin on a Borel monoplane (80-h.p. Gnome), and Master-at-Arms Quenehen on a Maurice Farman biplane (70-h.p. Renault), both of the Epinal escadrille, have made daily reconnaissances towards the frontier of promise.

On March 20th Captain Aviator Aubrey on a Deperdussin monoplane (Clerget rotary 60-h.p.) left Reims for Longwy, followed shortly after by Lieutenant Aviator Dietrich on a three-seated Deperdussin monoplane (100-h.p. Gnome), with an N.C.O. and mechanic as passengers. Despite the appalling weather both pilots landed in safety at their destination.—W.

GERMANY.

Double dirigible hangars of Zeppelin size are to be erected at Breslau and Posen. At these places and at Wiesbaden, Darmstadt, Mannheim, and Hamburg are to be stationed detachments of aerostiers.

General Von Heinisch, Inspector of Military Aeronautics, is at present at Frankfort-on-Maine. Six aviators flew to that place on March 15th from Darmstadt to report to their C.O.

Lieutenant Aviator Blutgen, of the Doeberitz aviation-station, begins this week at Gutenbury a series of experiments in bomb dropping.

It is rumoured that the Ministry of Marine intends to form ten new aviation stations, six on the North Sea and four on the Baltic.

During the month of February flights were made at Johannisthal on twenty-three days. Sixty-nine aviators and fourteen pupils made 2,373 flights.

The Zeppelin military dirigible Z4 has been totally destroyed while undergoing acceptance trials. Leaving Oos, near Baden-Baden at 8 p.m. on March 19th, it arrived over Carlsruhe on March 20th at 2 p.m. The wind being very high it was decided to land and relinquish the trial. A first attempt to land failed, owing to the gustiness of the wind, and the balloon was taken up to a height of 1,000 feet, where it flew for over an hour. Another attempt to land was then made. The balloon came close to the ground, the guide ropes were seized by a large detachment of Grenadiers of the Guard. In spite of all their efforts the balloon was blown to earth and broke in three pieces.—W.

The third test of the L.Z.16 before being accepted by the German War Office included machine-gun practice with ball cartridge from the gun platform on the top of the vessel.

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Five hundred shots in all were fired, proving the apparatus to be technically perfect and easily adjustable, whilst the aiming was of surprising exactness. L.Z.10 will henceforth be stationed at Koenigsberg and will fly thither shortly after Easter. This will mean a trip from the far south-western corner of the German Empire right up to its north-western frontier. In future the machine will be listed as Z.IV.

An airship and aviation ground company has been formed at Leipzig with a capital of 1,200,000 marks, both the city and the War Ministry being greatly interested in the scheme. The company intends building a hangar capable of housing two Zeppelins on its ground at Eutritzsch-Mockau, which has been lent by the town free of charge, besides a yearly grant towards the expenses. The inauguration of field and hangar is to take place in June in the presence of the King of Saxony.

The coming German Budget, with its vast military demands, and great increase of the air fleet, has led naturally to active discussion of the housing problem. We learn that both Breslau and Posen are about to erect hangars, which will afterwards be handed over to the War Office on payment of an annual interest on the expenditure caused by the construction of the sheds. The new aerial detachments will be established in barracks in Breslau, Posen, Hanover, Wiesbaden, Darmstadt and Mannheim.

Z.I., the oldest of the Zeppelins, has finished its lengthy career and is being taken to pieces, as even with all the improvements that have been made of late the vessel does not fulfil up-to-date requirements. Z.I. is stationed at Metz at present and the Gross M.I. will take its place ultimately.—B.

RUSSIA.

The Ministry of War has decided to form three military aviation schools, one at Moscow, one at Odessa, and one at Omsk. The aviation section of the Military Aeronautical School and the Naval Aviation School are to be closed.—W.

TURKEY.

Enver Bey, the Military hope of the Young Turks, recently made a prolonged reconnaissance of the Chatalja lines as a passenger on an aeroplane, piloted by a German aviator. So enters the new régime into the scheme of things military.

The Ministry of War has ordered thirty-three aeroplanes from different German firms.—W.

FOREIGN NOTES.

France.

M. Roland Garros, who is now at Nice, points out the great use of high engine power in attempts on the altitude record. While admitting the excellence of M. Perreyon's successful climb, he says that the advantage was with the Blériot pilot in having nearly double the power he had himself in his late record. The Blériot was fitted with a 160-h.p. Gnome, the Morane Saulnier with an 80-h.p. Gnome. Garros has the intention of attempting to recapture the record.

On March 16th M. Eugène Mercier was killed while flying a Deperdussin monoplane at Amberieu. He made too sharp a turn and side-slipped. His age was only seventeen.

M. Nicon, flying a Henry Farman biplane on March 15th, travelled from Nice to Porto Maurizio in Italy in forty-five minutes.

M. Bathiat, the one-time pilot of Sommer aeroplanes, has now gone into partnership with M. Sanchez Besa, and they intend to build monoplanes, biplanes and hydro-aeroplanes under the name of "Bathiat-Sanchez." They have purchased the major part of the effects of the Sommer and the Trian firms. Their works and hangars are at Mourmelon.

M. Jules Vedrines desires it to be understood that he does not intend to enter the ranks of constructors himself.

M. Gougenheim, on March 20th at Etampes, flew a Henry Farman biplane (50-h.p. Gnome) in a wind of from forty to fifty miles an hour. He remained in the air for over half an hour, descending finally in a spiral glide with his engine stopped.

On the same day M. Henry Farman himself made several flights with a passenger on a biplane on order for the British Government.

There is to be an aviation week at Ganges (Hérault) in the beginning of April. Three pilots have so far been engaged.

Germany.

New German duration records were set up at Johannisthal last week when Friedrich made a successful attempt on his own record (without passenger) of 5 hours 10 minutes. In spite of the tremendously high wind, Friedrich beat his own time by eight minutes on a 70-h.p. Rumpler-Taube. This meant 5,000 marks for him, as, in order to encourage pilots a sum of 1,000 marks (£50) is paid to them from the National Aviation Fund headquarters for every full hour.

Hardly had Friedrich descended when Sedelmayer set his 55-h.p. Wright biplane going, and braving rain and storm flew for 6 hours and 2 minutes, landing in utter darkness. The record therefore is held by Sedelmayer, who, besides a grant of 6,000 marks, is entitled to a monthly sum of 2,000 marks payable until January 1st, 1914, unless, as will surely be the case, his record is beaten before that date.—B.

Switzerland.

On March 16th Faire, on a Hanriot monoplane (80-h.p. Gnome) left Berne at 9 a.m. and flew towards the North. At 10.50 a.m. he reached his destination, Zofingere, where a smoke fire had been lit to guide him. The smoke was dense and he made several circuits to find a suitable landing ground, finally alighting in a field full of banks which upset him. The machine was wrecked. He escaped unhurt.

Chili.

The two brothers Rapini, who are now flying Blériot monoplanes (50-h.p. Gnome engines) in the republic of Chili, have given many excellent exhibitions. One of the brothers some days ago flew from Valparaiso to Santiago at a great altitude and in good time. The distance is about sixty miles.

French Military Dirigibles.

According to the latest account from France, the strength of that country in dirigibles at the present moment is as follows:

Ready for immediate use, three of the "croiseur" class, namely, the "Adjutant Vincenot," "Dupuy de Lôme," "Adjudant Réau."

Reconstructed, or about to be reconstructed, two "croiseurs," the "Lieutenant Chuard," and "Commandant Coutelle"; five of the "éclaireur" class, "Capitaine Marchal," "Selle de Beauchamp"; "Capitaine Ferber"; "Conté"; "Fleurus," and three "vedettes," the "Liberté," "Le Temps," and "Colonel Renard."

In November of this year five ships of 20,000 cubic metres capacity will be delivered, namely, one Clement-Bayard, one Astra, one Zodiac, one Lebaudy, and one of the "Fleurus" type; and in December three more will follow, namely, a Clement-Bayard, an Astra, and a Zodiac. These eight dirigibles will be classed as "grands croiseurs."

The Zeppelin Disaster.

The disaster, it is said, was due to lack of petrol forcing the "Ersatz Z. I." to land at Karlsruhe after its twenty-hour trip, that was to be its last. As an outcome of the catastrophe the demand for proper hangars has grown imperative, and is voiced throughout the Empire. The Oos hangar was useless, for a landing there would have been impossible in such wind.

The only reversible hangar is that being built by the Navy, but that is regarded as an expensive experiment.

What the public, represented by the newspapers, demands, are hangars allowing an entrance to be made on all sides and capable of housing not one or two permanent vessels, but at least three—hangars of a round type, for what is the good of the constant huge expenditure in building new aerial cruisers when the constant catastrophes, most of which could have been avoided had properly-constructed hangars been within reach, all point to a shortcoming, which, should it not be remedied, cripples the entire aim of the movement?

Of the sixteen Zeppelins built up to now, eight have been destroyed, viz., "L. Z. 2," on January 16th, 1906, in the Algäu; "L. Z. 4," on August 5th, 1908, at Echterdingen; "L. Z. 5," on April 25th, 1910, at Weilburg; "L. Z. 7" (Deutschland), on June 28th, 1910, in the Teutoburger Forest; "L. Z. 6" was burnt in its hangar on September 14th, 1910, at Baden-Oos; "L. Z. 8" was fractured at the Dusseldorf hangar on May 26th, 1911, and was replaced by the "Schwaben", "L. Z. 10" was destroyed by fire on June 28th, 1912, in Dusseldorf. And to these must be added the destruction of the "Ersatz Z. 1" at Karlsruhe on March 19th.—B.

Extracts from the Debate on the Army Estimates.

Mr. Lee (House of Commons, March 20th): I can assure the Committee that it is no pleasure to anyone who knows the right hon. gentleman and who has admired his many abilities to be obliged to express, within the somewhat inadequate limits of Parliamentary language, what we feel about his recent speeches. It is his misfortune, I know, to be called to an office which by no means is a bed of roses for anyone; which very few care about, and which very few make a success of. I say quite seriously that no one wishes more than I do that he should make a success of it; but so far, I cannot help saying, he seems to approach the great task which he has been called upon to deal with in a spirit almost of frivolous optimism and an almost—judging from the speech yesterday—incredible, and at the same time an obviously genuine, sense of self congratulation. I am quite sure it is unconscious. In times like this, when the whole of Europe is almost like an open powder magazine, and when a disastrous explosion might occur at any moment, it is really difficult to follow with patience some of the speeches which the right hon. gentleman makes in the country, and here, and which he seems to think good enough. These speeches, I venture to say, while causing unlimited amusement among foreign critics, must make his professional admirers wince. They make us in this House shiver. Then he made a speech the other day in his constituency at Ilkeston, in which he said that the Regular Army is far better equipped with the essential requisites of war than any army in the world. Really that is a monstrous assertion. Take the air service; the question of horses; the supply of officers on mobilisation; rifles; all these things. Does he really think—he can hardly believe it—that the Regular Army is better equipped than any army of the world.

Colonel Seely: Certainly.

Mr. Lee: I can only say I do not believe there is another man in the country who believes it.

Mr. Joynson-Hicks (House of Commons, March 24th): Before criticising the speech which the Secretary of State made last week, I would like to refer particularly to one or two points. As to engines for aeroplanes, I can cordially agree with him that for a long time past we have been deficient. I think there are only two English engines which have passed satisfactory tests. I am credibly informed that the makers of these engines, and the makers of aeroplanes, in this country have been starved before getting orders from the War Office. I think that it is advisable to say so at the outset of my remarks, because the right hon. gentleman has not fulfilled the expectations held out a year ago in regard to British manufacturers.

With regard to the management of the Royal Flying Corps at the Army Aircraft Factory, I cannot, on the information I have received, think that the machines, as to the matter of repairs, are cared for as well under Government control as under private control. The policy of France is not to have these very delicate instruments under the sole control of the Army Department, and instead of being repaired by ordinary French artificers, they are sent back to the makers. After a machine has done a certain number of miles, or a certain number of hours in the air, a representative of the maker is sent to overhaul and tune up the machine. I think much might be done in that way to limit the number of very serious accidents which take place, and which, I am bound to say, must take place for some years to come in connection with this new form of warfare.

As to the Monoplane Committee, I cannot help feeling that a great deal of delay has taken place. Some months ago the Secretary of State was frightened by the accidents which were taking place, and he issued an order *proprio motu*, that no flying should take place in monoplanes. As the result of that Order fourteen or fifteen new monoplanes were put back into the shed unused, and almost uncared for, while there were men who were ready and desirous to fly them, and who would have had to fly them in the event of war taking place. The Committee reported on December 3rd last, but no steps were taken in consequence of the Report. It was not made public until February 4th. During October, November, December, January and February these valuable monoplanes remained unused. I do not know even yet whether the right hon. gentleman has issued an Order that flying may take place upon these monoplanes. I believe they are still not being used for flying or practice by the officers of the Royal Flying Corps. It is rather interesting to notice that there are more monoplanes than biplanes flown in the French Army. I think the First Lord of the Admiralty has been giving his time and attention to monoplanes for the Navy. If they are too dangerous for the Army, I wonder the Secretary for War did not communicate with his colleague who is at the head of the Navy as to the risk in connection with monoplanes. The Navy have been flying their monoplanes, though the Army have not been allowed to do so.

On March 4th last year he said that the Army and Navy Flying Corps would be always on a war footing, and that the peace and war establishment would be the same. He told us then that this scheme involved the purchase of 131 aeroplanes. I wish to ask whether during the past six months the Aviation Service has been on a war footing, and whether he has purchased 131 aeroplanes during the past year?

The right hon. gentleman pledged himself that there should be three squadrons forming the Royal Flying Corps, that they should each fly twelve machines, and that there should be for each squadron six spare aeroplanes for casualties. Personally, I should have thought, having regard to the enormous number of accidents, small or large, which must take place, that if these squadrons were to be kept up to a war footing, there should be a 100 per cent, instead of 50 per cent. of spare aeroplanes. These three squadrons were to have eighteen machines, making fifty-four in all. These machines were to be kept on a war footing. I want to know from the right hon. gentleman whether at any time during the past year these three squadrons have been on a war footing. I wish to know further whether the fifty-four aeroplanes are efficient, ready to go to war at any moment.

He told us last week that there were 101 aeroplanes in the Army. When my right hon. friend was asked if they were efficient, he replied: "That depends upon what you mean by efficient." He fenced the question. May I tell the House what I regard as efficient. I would say that an aeroplane to be efficient must be as good as the bulk of those in the French Army. It must be capable of starting off at once, flying at a speed of at least 50 miles an hour, and able to rise in the air at least 3,000 feet. Anything short of that I do not consider efficient. An aeroplane may be efficient for the purposes of instruction; it may be good enough to use in a schoolroom for the practice of these young officers, but that is not a war footing. I think the right hon. gentleman has confused, and he certainly has confused the House, between aeroplanes on a war footing and aeroplanes which the Royal Flying Corps possess for the purposes of instruction. I have questioned him from time to time as to the number of aeroplanes possessed by the Royal Army Flying Corps as recently as, I think, January 15th and January 22nd. The right hon. gentleman gave me a very different figure from this figure of 101. If the right hon. gentleman has got 101 efficient aeroplanes, I have nothing further to say. If they are efficient for war purposes, all the complaint I have made falls to the ground, and I shall be forced to acknowledge my fault and to say that the right hon. gentleman has done far better than I thought he had done. But I do not think that those figures are consistent with the figures which he gave me in answer to questions in this House as recently as January 9th.

These are the figures which he gave us on January 9th. He repeated them on January 22nd in reply to other questions by myself. He said that the Royal Flying Corps, Military Wing, possesses twenty-nine aeroplanes, and the Central Flying School twenty-six. Of these, twenty-six and nineteen respectively are in flying order. That is scarcely two months ago, and he now tells the House that he has got 101 machines ready to fly. Where have the balance of the machines come from? He cannot tell us. In the boast which he made in a speech

he said that he had got 101 of these machines. If seventy of them are school machines, let him say so. But in the whole of this paper squadron he told us two months ago that there were only twenty-six machines that could fly. Of these twenty-six machines I think I am right in saying that at least twelve were these monoplanes which were not then in flying order. I asked again the question only a few days ago with regard to particular machines. It is only by getting the exact details that we can find out whether we have got the machines which the right hon. gentleman has rather boasted that we have.

Colonel Seely: I said so. I did not boast. Let us clear this away. I say we have got 101 aeroplanes. If the hon. gentleman doubts me let him say that it is untrue.

Mr. Joynson-Hicks: That is exactly what I am trying to say inoffensively, that we have not got 101 effective aeroplanes. I say that from the information which I have been able to get, based very largely on his own figures—

Colonel Seely: I say on my full responsibility as a Minister that we have got 101 aeroplanes which we are flying. I understand the hon. gentleman to say that that is not true. That is a very unusual statement to make. We certainly have got 101 aeroplanes.

Mr. Joynson-Hicks: Do not let the right hon. gentleman impute more than I have said. Throughout my speech I have tried not to be provocative. It is a matter of vast importance whether we have the machines or not. We may have 101 aeroplanes than can fly, and you might have 101 tom-tits that can fly, but this is no good for the purposes of the Army. What I am concerned about is, How many of these 101 are efficient for military purposes? The right hon. gentleman told me about two months ago that he had only twenty-six on the military side that could fly. I do not care how many he has got in the schools for flying or training. He could not use in war these machines after they had been buffeted about in the Army Flying Schools for months with beginners flying upon them and coming down crash upon them. He dare not send any military flying corps out to war with those machines. The right hon. gentleman made a most extraordinary suggestion in his speech the other day. He said that though some of these machines were machines on which he would not let officers fly in times of peace, yet in times of war there were so many bullets, troubles, and other dangers going about that they might take an extra risk and fly on these machines. I do not think that he could really have meant what he said.

Everybody knows that there have been very serious foreign complications during the past six months and the past six weeks. Everybody knows that if war should break out it would be with absolute suddenness. How many of these 101 machines could the right hon. gentleman send out with the Expeditionary Force or any other force? At the outside, twenty-five machines.

The right hon. gentleman must tell us with greater frankness what these machines can do. I asked him whether they could fly sixty-five miles an hour, and he said that it was not in the public interest that the House should know that. When did he begin to think that? I suggest that he began to think that when my questions, which I am afraid I rather showered upon him during the last three months, got a little too near the point, because only three months ago he was quite prepared to tell me how many machines we have got which could fly seventy miles an hour. He was very frank with me up to the time when I began to ask his colleague the First Lord of the Admiralty questions with regard to the naval side of aeroplanes. The First Lord of the Admiralty was rather, I will not say more clever, but more cautious than the right hon. gentleman. He first developed this idea of secrecy. It was the First Lord of the Admiralty who said, "It is not in the public interest to answer your questions on various points, and though the Secretary of State told you how many could fly at seventy miles an hour it is not in the public interest to tell you how many can fly at sixty-five miles an hour." I think that it is in the public interest and the interests of the country that we should know. If I ask the First Lord of the Admiralty how many "Dreadnoughts" he has got, and what is their speed, or how many torpedo boats he has got this House is entitled to know. Otherwise we should not vote the Navy Estimates. If I want to know the velocity of a 13.5 inch gun or anything of the kind, I am entitled to get the information. Why am I not entitled to know how many effective aeroplanes we have got and the pace at which they can go?

This policy of secrecy has been set up almost entirely because of the fact that he has not got a sufficient number of effective aeroplanes to man these three existing squadrons.

Colonel Seely: I must confess that I have been a little puzzled by the attitude of one or two hon. gentlemen who feel themselves unable to accept a plain statement. I do not in the least complain, but it seems to me to be a little unusual. When an hon. member says something is so, somebody else may say, "I do not believe it," but it is, of course, not discourteous. I do not, however, complain. Now we have got a little further, because the hon. Member for Brentford (Mr. Joynson-Hicks) has been good enough to give us a definition of what he calls an efficient aeroplane or one efficient for war. It is very difficult to define an aeroplane efficient for war. You can make it one of high speed or low speed, facility for landing, etc., and he has taken a figure which he says he will take for the purpose of this Debate, and he will call a machine efficient for war that will fly fifty miles an hour, rise to 3,000 ft., and continue to fly at fifty miles an hour at that height. I have got on to our experts on the telephone since the hon. Member spoke, and I can tell the House that, making every allowance and with a determination to understate rather than overstate, we are in possession of over eighty aeroplanes which come up to that standard. My belief is that on the hon. Member's statement the number would be about eighty-seven, but in order to be on the safe side I say it is over eighty. And so we may clear away that suspicion which I regret has come into this Debate, because there need be no suspicion about it.

We were working up to secure over 150 by May 31st. We have had great difficulties owing to delays. I impute no blame to the manufacturers, because in a new industry in all countries there always must be delays, especially to secure safety. Delay has been delay caused in the manufacture of the suitable stays, because we found some kind of stays were dangerous. This comes out by accidents, and we have had scientific investigation at the Royal Laboratory at Kew. Consequently we have had to go to our manufacturer and say, "You cannot make the stays up to your specification because it will not be safe." That has happened very often and has been the cause of delay. Working on the programme laid down the position is that by next Monday we shall have added a further number of twenty-six, all of which will be far above the standard laid down by the hon. Member for Brentford; and in the course of the following eight weeks a further twenty-one will be added, if the deliveries are made as expected. I hope after this statement we shall have no further disputes. I want to be quite frank with the House. If we get the deliveries we shall have to-day week 127, of which at least 110 will come up to the hon. gentleman's standard, and by May 31st we shall have 148, and possibly the number may be accelerated, of which at least 130 will come up to his standard. I do not wish to argue whether that is wholly adequate or inadequate to our needs, but the people who have been concerned in this difficult business of aeronautics have worked very hard indeed to make so enormous an increase in personnel and material as from 12 to 123, an increase of over 900 per cent. —all men who can fly, and and the great majority of them very expert fliers—and from 17 to 101, and within a few weeks more to 148. To have made so great an advance with so few mistakes reflects great credit, not on me, but on those who work under me.

Mr. Joynson-Hicks: There was a further addition to my suggestion, and that was that they should be ready to start for war within a reasonable time.

Colonel Seely: Oh, yes; these eighty are ready to go and will fly at 50 miles an hour, and will continue to fly at 50 miles an hour at 3,000 feet.

Mr. Hunt: May I ask whether the whole 101 aeroplanes are absolutely owned by the Government?

Colonel Seely: I believe they have been paid for. I hope we have got them safe. We certainly have got to pay for them, whether the money has been actually handed over or not. If we get delivery, we shall have 127 by this day week and 148 by May 31; and we have now in possession 101. unless there have been two delivered during the holidays.

Other People's Opinions.

The following extracts give briefly the opinions of our leading allies in the attack on the Government as the result of what Col. H. S. Massey, C.B., has rightly called "The Great Betrayal."

Mr. C. C. Turner, in "The Pall Mall Gazette":—

"The great betrayal, leading to Britain's present ignominious and perilous position, is to be continued. For the Government to admit the ignominy and the peril would be too much.

"They do not admit it: instead, they say that all is well, and to prove it they issue an erroneous statement of the position, make picturesque assertions about their 'secret' strength, and announce an aeronautical policy governed, as they say, by considerations of strategy and tactics, that must astonish every soldier and sailor in the land.

"Colonel Seely is attempting a big bluff, or perhaps he has himself been bluffed. But this is what it means:—

"He says, in effect, to the private manufacturer, whose designs have gone to the building up of every machine produced at the Royal Aircraft Factory. 'You are no longer wanted; we have the best machine in the world!'

"The factory has all along existed as a parasite upon the industry. True, it now possesses some excellent talent, but there is more and better talent outside it. And Colonel Seely says we have 'the best aeroplane in the world.' The factory that turned it out must surely have told him that! There will be merriment to-day in French and German aeronautical circles."

Mr. H. Massac Buist, in "The Morning Post":—

"Colonel Seely's statement that the Army possesses 101 aeroplanes to-day and will have more than 148 by May 31 is something more than a welcome surprise; it is a revelation of the manner in which the Government is failing to support the native industry. The orders which our manufacturers have had and are at present executing, including those for building biplanes of the B.E. Royal Aircraft type, do not account for half the total of the machines named. Moreover, the orders placed among the foremost foreign makers may be included in that half.

"A greater mystery than the question where these 101 Army aeroplanes that we already possess have been and are accommodated, and when and where they have been used, is the mystery where they have been brought into being. Are we to understand that the Government is manufacturing in competition with the young industry, and is not confining the Royal Aircraft Factory's activities to experimental work?

"As for the claim of the Minister for War that we have the finest aeroplane in the world, it is not justified by facts. We have an Army pattern biplane which is as good as any other, but is not in a class by itself as 'the best.' Colonel Seely appears to consider it something wonderful that it has been timed to attain a maximum mean speed over a short distance of 91.4 miles an hour. France has aeroplanes that travel at the rate of 120 miles an hour and have flown 119 complete miles in sixty minutes; so that we are only three-quarters on the way to attain such speed as is already possible."

Mr. J. H. Ledeboer, in the "Daily Telegraph":—

"Colonel Seely's speech fails to answer a single point in the indictment; it justifies up to the hilt every criticism of the hopeless inefficiency of the present system. Until a broad national policy is boldly adopted the country will remain defenceless, as it is to-day, against every form of aerial attack, the sport and ridicule of every European spectator.

"Colonel Seely complains, in the first place, of the misapprehension that prevails regarding our position, and ascribes this to the reluctance of military aviators to publish their doings in the Press, together with the fact that military aviation was of so confidential a nature that it had perforce to be kept secret in the interests of the State. That latter plea has been advanced on every occasion when the Government has been accused of neglecting national security on a definite issue, and has been asked to render an account of its stewardship. It will hold good no longer; there is no secret about aviation, save only so far as the policy of the Government is concerned. It is a matter of definite numbers of men, aeroplanes, airships, and organisation."

"The Daily Express":—

"The speech with which Colonel Seely introduced the Army Estimates in the House of Commons yesterday was worthy of Mr. McKenna himself.

"The Secretary of State for War declared that this country possessed 101 aeroplanes. He produced this figure by an indiscriminate census of flying machines no more germane to the subject of Army aviation than a census of coster-mongers' donkeys would be to the Army remount question.

"He admitted that the number of our Army airmen is considerably greater than the number of our aeroplanes—even at his own figure; this despite the warning of Major Sykes, commanding the military wing of the Royal Flying Corps, that all aeroplanes will have to be renewed every three or four months on active service.

"The Globe":—

"Airy Fairy Tales:—We must be permitted to receive the assurances of Colonel Seely yesterday with something less than complete confidence. How his fleet of 101 aeroplanes is made up we do not know, but we should be very much surprised to hear that they are all in the hands of the military authorities, or that they all satisfy military requirements. Be that as it may, the observations he was pleased to let fall on the subject of airships show that he has not appreciated even the elements of the problem before us."

"The Evening Standard":—

"Colonel Seely's speech may soothe the public mind for a time, but it is certain that before many weeks pass we shall have a rude awakening as to our aerial capacity."

Figures for a Million.

As an appendix to the Memorial addressed by the Aerial Defence Committee of the Navy League to the Prime Minister, the following schedule of suggested expenditure has been issued. It should be noted that this is entirely capital expenditure for the purpose of making a beginning with our aerial defences, and is not affected in any way by the sum voted for the regular annual charge for the upkeep of the Royal Flying corps, which is an establishment expense, nor is it considered that the sum can fit out anything like a fleet we need. It may also be well to explain that "establishment" in this matter does not mean "establishing" a new thing, but is used in the same sense as in speaking of a person "keeping up a big establishment."

Army.—Aeroplanes of latest and most efficient type to equip the five squadrons of the Military Wing R.F.C. allowed for in the Estimates, and provide adequate reserves in the ratio of 1 to 1. (120.)	£120,000
Transport for five squadrons (15 flights)	£120,000
Squadron headquarters for five squadrons, with Barracks, Workshops, Sheds, and Garages	£250,000
Workshop Depôt (Lines of Communication)	£25,000
Navy.—Four large rigid dirigibles (experimental)	£200,000
Three double Sheds for same	£150,000
Hydrogen Plant for three Stations	£60,000
Hydro-aeroplanes (experimental), 75	£100,000
Royal Aircraft Factory (experiments only)	£100,000
Land (Purchase of five landing grounds of 200 acres each)	£30,000
Civilian Aerodromes (Two double sheds for R.F.C. at each of six private aerodromes)	£6,000
Total	£1,161,000

(N.B.—This allows only for the five aeroplane squadrons thought by Colonel Seely to be sufficient this year for the Expeditionary Force, and does not include anything for Home Defence.—Ed.)

Ground rent for R.F.C. sheds at Civilian Aerodromes, and use of ground there, repairs to machines, wages at R.A.F., pay and allowances for R.F.C., hydrogen for dirigibles, and all usual "running expenses," come under the heading of establishment expenses, which should be included in the ordinary votes in the Naval and Army Estimates, and so do not enter into these calculations.—C. G. G.

Easter at Hendon.



A general view of the paddock at Hendon on Easter Monday, with M. Verrier in the distance.

GOOD FRIDAY.

Friday's sport was very nearly ruined, first by the severe and gusty wind, then, when that had subsided to a limited extent, by frequent downpours of rain. Nevertheless, although the racing fixtures arranged did not take place, the numerous visitors were well rewarded for their tribulations by several fine exhibition flights, M. Desoutter being the first up, and M. Chevillard again demonstrating, in an 80-h.p. British-built Henry Farman, how to convert a deadly sideslip into a fatal dive—and still continue to exist.

He, with Captain Tyrer as passenger, and M. Desoutter flew a four-lap race, the Blériot receiving a start of 12 seconds and winning by nine of them.

At this point, a 110-h.p. Canton-Unné Bréguet, scenting sport, came out of his hangar and gave tongue, but a fresh downpour drove him back again to be wiped dry.

M. Noël made a few circuits in the new 70-h.p. Grahame-White biplane, which has been bought by the War Office, and Mr. Lee Temple essayed a short flight in his Caudron biplane (the only 35-h.p. machine to venture forth), but was brought to earth by a defective plug.

The day's flying was wound up by the somewhat dramatic arrival—in a British-built Maurice Farman biplane and a rainstorm—of M. Verrier to the martial strains of the Marseillaise, after a tempestuous flight from Farnborough, covering the 30-odd miles in 19 minutes.

SATURDAY.

Saturday morning promised well, but the promise was not kept, for the wind freshened and became very treacherous after noon. M. Richet was up early on the Bréguet and said it was the trickiest wind he had experienced. M. Chevillard took his Henry Farman up for a height competition, but gave it up after reaching a height of 1050 feet and came down in one of the most remarkable spiral dives ever witnessed at Hendon. He found it impossible to rise above the 1,000 ft., because every time he rose another 50 feet he struck a cloud, and was promptly dropped anything between 40 and 80 feet.

There were no other competitors. M. Verrier made some circuits in the Maurice Farman, but wisely attempted no "stunts," as the wind was becoming even more tricky, and his engine was not behaving itself quite so nicely as usual.

Mr. Gordon Bell, with his mechanic, Chapman, as passenger, arrived from Eastchurch in the course of the afternoon, piloting a new and very handsome 50-h.p. Short biplane, of the improved S.38 type, an exceedingly fine performance considering the weather and the low power. The 51 miles,



M. Collardeau, winner of the "Oddenino Trophy" and divider of the "Daily Express" 100-guinea prize, on his Bréguet.

with a side wind, only took an hour. Over Enfield the gusts were so bad that the toolbag was lifted clean off the floor, and came down again upside down.

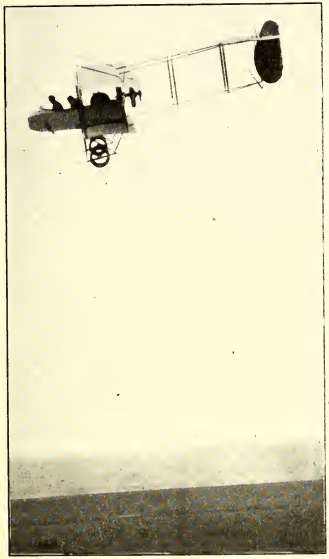
Soon afterwards Mr. Spratt took out a little 35-h.p. and did a short but very fine flight, pitching and rolling in the big gusts like a cork in a sea.

Later in the day M. Verrier, with Mr. Gates as passenger, and M. Chevillard started out to race each other and had nearly completed their first circuit when they ran right into a fierce squall coming up from the south-east. The two aviators had barely time to land before the worst gust swept across the aerodrome. Lightning, thunder and copious rain followed, while the wind rose suddenly to such a height that the Farman mechanics had their work cut out to hold the two machines to the ground, while Mr. Gordon Bell's Short biplane, being for the moment unattended, was lifted up sideways, turned completely over, and laid down—none too gently—upon its back, suffering considerable damage, chiefly to tail-booms, rudder and ailerons.

Thus ended the day's display. There were those among the crowd who expressed disappointment, but for those who knew anything of flying it was one of the finest exhibitions of the modern aeroplane's capabilities under adverse conditions that has yet been seen.

Easter Sunday.

Easter Sunday provided some very fine flying. MM. Chevillard and Verrier doing their usual good work. Mr. Hamel turned out and performed a sort of aerial duet with Chevillard, and afterwards flew off to Brooklands, returning after a short stop, to do more fancy flying. Young Mr.



M. Chevillard and Captain Tyrer on the Henry Farman.



One of M. Chevillard's fancy descents.

Temple flew quite well on his little Caudron, and Lieut. Wildman-Lushington, R.M.A., of the R.F.C., did a particularly good test flight on the Admiralty's new 80-h.p. Caudron. M. Collardeau, the new Bréguet pilot, gave a foretaste of his quality, and all went well till that popular young Blériot pilot, Marcel Desoutter, came to grief.

He told several of those who went to pick him up that he was reaching forward when about 30 feet up to turn off his petrol to land, and as he did so his left hand slipped on the cloche. Before he could regain control the lower "planche" hit the ground, and the chassis doubled up, then the engine hit, and the whole front of the machine crumpled. His left leg was caught in the wreckage, and badly fractured below the knee, but otherwise he was unhurt. He very pluckily raised himself in the wreckage, and waved his handkerchief to those who ran to his rescue to show them that he was not

dangerously hurt. On Monday it was reported that he was doing well, but the surgeons were anxious about his leg, as one of the main arteries was severed, and they also feared blood poisoning. However, we must hope for the best, and everyone will wish him an early and complete recovery, for little "Marcel" is one of the best-liked of all the pilots, because of his gentle, unassuming manner, which has not been spoiled by the knowledge that he is popular on account of his pluck and skill.

Bank Holiday.

Easter Monday was "Daily Express" day at Hendon, and some really remarkable flying was done. The first event was a cross-country handicap to Elstree and back for a trophy presented by Signor Oddenino, of the excellent and fashionable restaurant in Regent Street. Six machines started, and a very fine sight they made as they grew smaller and smaller in the distance. The race finally went to M. Collardeau on the Bréguet in 13m. 13 2-5 secs. M. Verrier (M. Farman) was second in 13m. 22secs.; Mr. Lewis Turner (Caudron) was third in 13m. 33secs.; and M. Chevillard, fourth, in 13m. 42 secs. Lieut. Porte, R.N., on the new 80-h.p. Deperdussin, flew remarkably well, but was out-handicapped, and on returning he hit a bump in landing, and damaged his axle, which put him out of further racing. Mr. Robert Slack, of I.C.S. fame, flew an elderly 50-h.p. Blériot, but was simply outpaced.

After this the six lucky ladies who won free flights in the "Daily Express" competition, were taken up by M. Verrier or M. Chevillard; and as all six winners turned up, the paper very sportingly gave two extra flights to the "reserve" winners, of whom one was taken up by Mr. Turner. All of them enjoyed their flight hugely.

The "Express" also gave free admission to 100 boys and 50 girls, some of whom were waiting for admission quite early in the morning. These free flights and free tickets are quite the best possible method of popularising aviation in this country, and the "Express" deserves the thanks of everybody for its sportsmanlike ideas.

Not content with this, the "Express" gave a 75 guinea first and a 25 guinea second prize for a race "round the sticks." Owing to the panic purchases of the War Office the Grahame-White pilots were without machines, and there was still too much wind for the 35-h.p. Deps. and Caudrons, so only four started. In the first heat M. Collardeau beat M. Chevillard, after a fight right to the finish. In the second, M. Verrier beat Mr. Turner by nearly half a lap, the 60-h.p. Caudron evidently having impressed the handicappers with the idea that it is even faster than it is.

The final was a fine race. After struggling gamely to catch him all the way, M. Collardeau just managed to dead-heat with Verrier after an 8-lap race. The money was divided by agreement, but the two competitors flew another 2-lap race for the medals. This was won by Verrier. Afterwards, Mr. Temple flew the little Caudron, and did very well. Altogether, the Monday meeting was one of the best of the year, and evidently the 25,000 people who came were very well pleased with the performance presented to them. Evidently, Hendon is in for a big season with reasonable luck in the weather, and the proprietors well deserve it for the way they have kept interest alive during the winter.

The Latest War Office Purchase.

Mr. Grahame-White is to be congratulated on having pulled off a very comprehensive deal with the War Office during the recent rush to secure aeroplanes for the Army in time to make up figures for the Estimates. The following machines have been bought by the Army from the Grahame-White Aviation Co., Ltd.:—The 80-h.p. Henry Farman flown so pluckily by Mr. Gates from Buc to Boulogne last summer, and since used regularly as a passenger "bus" by Mr. Noël; the 70-h.p. "Wake-up, England!" Henry Farman used by Messrs. Grahame-White, Noël, and Travers as a hydro-aeroplane, wrecked in Mr. Gates' night-flying smash, rebuilt, flown by Mr. Noël and Mr. Grahame-White at St. Moritz, and recently returned to Hendon; the 50-h.p. Grahame-White school biplane, on which Mr. Manton and others have flown for many months, and on which Mr. Gates used to do his famous "rag-time" flying; the old 70-h.p. Nieuport on which Mr. Grahame-White won much money in America last year, and bought some months ago by the late Mr. Harold Barlow, but not flown since; the new 70-h.p. Grahame-White biplane on Henry Farman lines, designed and constructed by Mr. Bill Law, chief of the G.W. aeroplane shop; and two G.W. biplanes, "popular type," with 35-h.p. Anzani engines. The last three were ordered some time ago, but the other four were purchased at a moment's notice. The 80-h.p. is of comparatively modern type, but not so fast by 5 or 6 m.p.h. as its British-built prototypes on which M. Chevillard has been doing such startling things lately. The 70 and 50 h.p. will both make useful school machines, as they are slow, but very controllable, provided there is not too much wind. Neither are, however, fit for active service. The Nieuport is a good machine, but the Army already possess five Nieuports which no one cares to fly, so why buy another of an old type? The three other machines are also excellent for school work.

Strangely enough this purchase was carried through quickly and on business lines, without the usual game of "send the fool further" which the War Office and R.A.F. generally play with the unfortunate constructor. I sincerely hope that Mr. Grahame-White received top price for all the machines. His firm deserve it for the work they have done in popularising aviation.

All the same, the net increase to our active service fleet is one well-worn second-hand machine. And why buy second-hand foreigners when half a dozen British firms have been practically idle for six months at a time because the buying department at the R.A.F. and the Army Contracts department at the War Office would not send orders through—although the R.F.C. kept on asking for machines?

Easter Monday at Brooklands.

The weather conditions were ideal for the Eastern Aeroplane Handicap, which was flown at 5.30 on Monday afternoon. The event was a cross-country race of about twelve miles, out three miles to the northward, and home twice. The prizes were fifty guineas or a cup (presented by the British Petroleum Co.), £20 to the second, and £10 to the third, or cups at option.

Eight machines were entered, and six lined up for the start.

Mr. Spencer got off first with a start of 8 mins. 12 sec., but merely made a circuit of the ground and retired. Next up was Mr. F. W. Merriam in a 50 h.p. Gnome school Bristol. He received a start of 6 mins. 45 sec., but it availed him nothing, for he got lost and was seen to the westward silhouetted in the sunset for a long time before he got his bearings.

On returning, after the race was over, he approached the ground at a great height, and many spectators imagined that he was M. Verrier arriving too late. Mr. Merriam made a beautiful and spectacular spiral glide to earth.

The third machine up, with a start of 6 mins. 2 secs., was the 50 h.p. Gnome Vickers school biplane, piloted by Mr. A. Knight, and after him went Mr. J. Alcock in Mr. M. Ducrocq's old Farman with a start of 5 mins. 25 sec. Then went Mr. H. G. Hawker in Mr. Sopwith's duration record biplane (40 h.p. A.B.C. engine) with a start of 2 mins. over the scratch man, namely, Mr. R. H. Barnwell in the Vickers monoplane (60 h.p. Vickers R.E.P. engine).

Nine minutes and thirteen seconds after his start, Mr. Ducrocq's Farman circled the pylons, leading Mr. Knight's Vickers by a short elevator; they started on their second journey practically together. A few minutes later came another pair, the Vickers monoplane, a couple of lengths ahead of Mr. Hawker. Then to everybody's regret, the little biplane was seen to circle the ground and come down.

The winner was Mr. Alcock, his handicap time for the double journey being 20 mins. 40.2 sec. Mr. Knight was second, his handicap time being 21 mins. 19.2 sec. Third came Mr. Barnwell on the Vickers monoplane, with 21 min. 37.4 sec., but he was disqualified for fouling the final pylon.

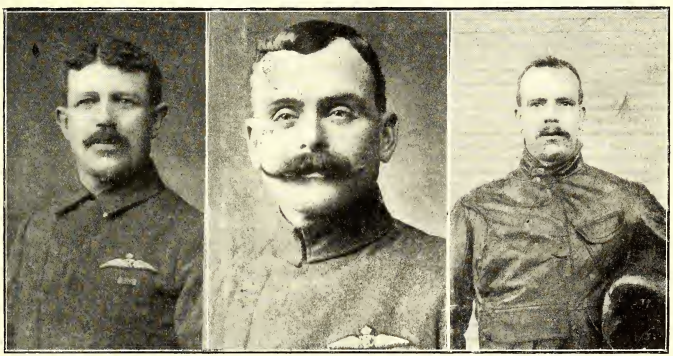
To Scientists Only.

It is announced that the latest report from the Aerodynamic Institute of Koutchino, one of the leading laboratories of the world, can now be obtained at the price of 8 francs from the Librarie Aeronautique, 40, Rue de Seine, Paris.

The Event of 1913

GHENT
International Exhibition

Opens April 26



Sergeant Stafford, Sergeant Street, and Sergeant Vagg, Pilots of the Royal Flying Corps.

Mr. Pickles at Gloucester.

Mr. Sydney Pickles, who has bought the Radley and Moorhouse 2-seater tandem Blériot from Handley Page, Ltd. (in whose works the machine was rebuilt) has been flying at Gloucester during the Easter holidays. On Sunday he took the machine, which is engined with a 60 h.p. Anzani, up to a height of 1,000 feet; and on Monday, among other flights, he went as far as Cheltenham, taking Mr. Ding as passenger, and distributing a large quantity of handbills, after flying round the city of Gloucester.

Shoreham Easter Meeting.

On Saturday, March 22nd, there were to have been a speed handicap, bomb dropping, quick rising competition, and exhibition flights, all of which were cancelled owing to extremely bad weather.

On Easter Monday Mr. H. R. Simms was out in the morning on the Avro biplane (60 E.N.V.), but came to grief in the afternoon. He had done several circuits, and came down in a neat glide, but on landing the skid apparently broke, and the machine stood tail up digging her nose in the turf. Earlier in the afternoon the 45 Isaacson was being run, but, unfortunately, a cylinder blew off. Thus, two machines were rendered hors de combat. Subsequently, Mr. Simms took up the Avro biplane (35 Green), but found the wind too strong. A. V. Roe and Co. have now bought the Colver-England machine, photos of which appeared in The Aeroplane some time ago.—Clarence Winchester.

A Straight Question.

On several occasions during the past year a well-known constructor of my acquaintance has discussed with me the idea of making a small single-seater biplane, with a very small chord and a 100-h.p. engine, to fly at a speed of something between 85 and 95 m.p.h. I have heard—not from the constructor himself—that dimensioned sketches of such a machine were submitted to the Royal Aircraft Factory authorities who were told that, if a fast scouting machine of this type was likely to find favour, this constructor's firm would build one and send it for test, with the option of purchase. I am also told that the designs were sent back with an intimation that the type was not of interest. Further, I learn that the 91-4-m.p.h. 100-h.p. biplane built by the Royal Aircraft Factory, the machine so highly eulogised by Colonel Seely on Wednesday of last week in the House of Commons, bears a marked resemblance in its general lines to the designs submitted and rejected. Many of us would like to know whether there is any connection between these private designs and the Government product? Having in memory Mr. Cody's war-kites—for which he finally obtained £5,000 after five years' fighting—and the "adoption" of the Willows patent swivelling propellers for dirigibles—for which the patentee has received nothing—one is inclined to be curious about the real origin of the products of "the best brains in the world," which Colonel Seely attributed to the "scientific designers" at the Royal Aircraft Factory.—C. G. G.

The Week's Work.

MONDAY, March 17th.

R.F.C., Central Flying School.—Very strong westerly wind. heavy snowstorms all day. No flying.

TUESDAY, March 18th.

R.F.C. Central Flying School.—Fine, clear and calm till 10 a.m., then freshening south-westerly wind and rather dull. On Maurice Farman 411, Sergt. Stafford 10 and 12 mins.; Sergt. Street 9 and 20 mins.; Sergt. Kemper 14 and 20 mins.; Leading Seaman Bateman 29 mins. for brevet, landing within 20 and 8 yards of mark. Air Mechanic McNamara 16 and 20 mins. Air Mechanic Collis with Piper Urquhart, of Royal Scots Fusiliers, 10 mins., with Lieut. Vernon 10 mins. and 10 mins. alone. Lieut. Longmore 10 mins. alone, with Lieut. Vernon 15 mins.

On Maurice Farman 415, Major Trenchard 20 mins.; Master Mechanic T. O'Connor 15 mins.; Air Mechanic Higginbottom with Private Duncan 5 mins., with Piper Richardson, of Royal Scots Fusiliers 5 mins., with Air Mechanic Baldock 5 mins., with Capt. Lithgow R.A.M.C., 7 mins., and 40 mins. alone, to Andover and returning; Engineer Lieut. Randall 25 mins.; Assistant Paymaster Lidderdale 16 mins. On Maurice Farman 418, Lieut. Burroughs 15 and 70 mins.; Lieut. Warter 30 mins.; Capt. Tucker 15 mins.; Lieut. Rathborne 20 mins.; Lieut. Littleton 15 mins.; Lieut. Marks 20 mins.; Lieut. Bowhill 30 mins.; Major Gerrard with Lieut. Oliver 10 mins.; Lieut. Oliver 15 mins.

On Maurice Farman 426, Lieut. Ross 16 mins.; Lieut. Marix 10 mins.; Lieut. Boyle 18 mins. On Maurice Farman 427, Lieut. Small 11 and 31 mins.; Lieut. Bigsworth 22 mins.; Lieut. Glanville 21 mins. Air Mechanic Collis with Air Mechanic Surman 17 mins., with Sergt. Robbins 21 mins.; Lieut. Holt 32 mins. over Andover and back; Capt. Mellor 59 mins., at 5,800 ft., ending with beautiful spiral of eleven complete turns.

On Maurice Farman 428, Lieut. Roupell 20 mins.; Lieut. Kennedy 27 mins. On Maurice Farman 429, Lieut. Conran 6 mins. alone, with Lieut. Fitzmaurice 3 mins. On Maurice Farman 431, Capt. Macdonell 20 mins. and 38 mins. to Andover and back; Lieut. Conran 30 mins.; Lieut. Soames 47 mins. to Andover and back; Lieut. Arthur to Andover and back.

On B.E. 416, Capt. Salmond with Capt. Salmond, R.F.A. 45 mins. On B.E. 417, Lieut. Dawes 10, 13, 15, and 20 mins. (twice). On Henry Farman 412, Major Gerrard with Master Mechanic T. O'Connor 5 mins.

On Short 401, Major Gerrard with Lieut. Bowhill 5 mins., with Lieut. Fitzmaurice 5 mins., with Capt. Vivian 25 mins. On Short 402, Major Gerrard with Sergt. Wright 10 mins., with Lieut. Fitzmaurice 10 mins.; Sergt. Wright 10 mins.; Lieut. Fitzmaurice 20 mins. Major Gerrard with Lieut. Fitzmaurice 5 mins. to practice ground and Lieut. Fitzmaurice then for brevet, taking it in good form, time 14 mins. first half and 12 mins. second half. Lieut. Bowhill 15 mins.; Capt. Macdonell 15 mins.; Major Gerrard with Lieut. Read 15 mins.; Lieut. Read 15 mins.

Major Fulton arrived from Farnborough on new Avro 430. M. Chevillard arrived from Farnborough on new Henry Farman biplane.

Hendon.—At Grahame-White School, Mr. Bayetto out early doing straights on No. 2 B mono, later making his first turns. Mr. Louis Noel testing new machine. Mr. Ian Davis out.

At W. H. Ewen School, pupils out at 6.20 a.m. with Mr. Turner and M. Baumann. Mr. Torr had 35-h.p. machine for straights. M. Baumann, with 28-h.p. Caudron, instructed Messrs. McGregor, Zubiaga, Stewart and Pendlebury. All pupils out after lunch. Mr. Ewen up on 35-h.p. and 60-h.p. Caudrons, later with Mr. Chataway. Mr. Turner also out on 60-h.p. Caudron.

At Bladot School, MM. Desoutter and Clappen circuits on No. 1; Captain Cox and Mr. Williams on taxi. In afternoon, Miss Trehawke-Davies and Mr. Slack out on former's new 70-h.p. tandem, and after couple of trial circuits and a glide went off for a cross-country. On returning, oil did not reach engine, and Mr. Slack made forced landing at Harlington in beautifully level field with most convenient barn within 100 yards. Mechanics from Hendon took engine down and no damage was found.

Brooklands.—At Bristol School, Mr. Bendall testing. Mr. Merriam with Lieut. Gordon McClellan.

WEDNESDAY, March 19th.

R.F.C., Central Flying School.—Strong W. wind. No flying.

THURSDAY, March 20th.

R.F.C., Central Flying School.—Strong W. wind. No flying.

FRIDAY, March 21st.

Hendon.—Excellent flying by MM. Chevillard, Desoutter, Verrier and Temple.

SATURDAY, March 22nd.

Hendon.—Fine performances by MM. Chevillard, Verrier, and Spratt.

SUNDAY, March 23rd.

Hendon.—Messrs. Chevillard, Verrier, Temple, and Desoutter out, last having bad accident.

Brooklands.—At Bristol School, Mr. Merriam testing, and then with Lieuts. McClellan and Morgan. In afternoon, Mr. Merriam up in nasty wind with Mr. Howard and Lieut. Pierse (new pupil) for first trip.

At Vickers School, Mr. Barnwell out on No. 5, but engine not well. Later, Mr. Knight out on school biplane, but wind too much for comfort.

Mr. Hamel arrived from Hendon in 35 mins. on elderly Blériot on which Miss Quimby flew the Channel last year. Engine not pulling well, but pilot did usual fine spirals. After short stop went back to Hendon to tea, travelling very fast.

Mr. Harry Hawker out on A.B.C.-Sopwith record-breaker biplane, much pitched about, and engine short of 50 r.p.m.

The Bristol Aero Club.

At the annual meeting of the Bristol and West of England Aero Club, Mr. Samuel White (vice-president) took the chair in the absence of Sir George White, Bart. (president).

The report of the hon. secretary (Mr. Alan Jenkins) was read; he commented upon the interesting series of lectures delivered during 1912, upon the excursions to the Bristol flying schools at Salisbury Plain and to the British and Colonial Aeroplane Factory, and upon the great success of the various model-flying competitions. He also mentioned the fact that the membership had declined from 96 to 67

The accounts showed a deficit of £13 16s. 3d. An honorarium of 20 guineas was voted to Mr. Alan Jenkins, who has had to relinquish the secretaryship on account of ill-health.

The chairman, in the course of his remarks, accounted for the decrease in membership by the fact that aviation had developed, not, as the founders of the club had expected, along the lines of sport, but rather along commercial lines prompted by military and naval necessities. He emphasised the unfortunate fact that England was, "as usual," last in the race, and commended the patriotism of the various men who had devoted time and money and talent to the poorly rewarded work of developing the science of aviation in this country. He also called attention to the utter inadequacy of the provisions made in this year's Estimates.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.

For the convenience of Advertisers, replies can be received at the office of The Aeroplane, 166, Piccadilly, W.

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"How to take out patents in England and abroad." (By Arthur E. Edwards, F.C.I.P.A.) 2s. post free.—Arthur Edwards and Co., Ltd., Patent Agents and Consulting Engineers, Chancery Lane Station Chambers, W.C. 'Phone 4536 Holborn.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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SCHOOL OF FLYING. See special announcement in tuition column, page 375.

THE LONDON AERODROME, HENDON, N.W., is easy of access from all parts by Tube, Tram and 'Bus. ADMISSION 6d., 1s. and 2s. 6d. MOTORS (includes Chauffeur) 2s. 6d. Further Particulars from London Aerodrome Offices, 166, Piccadilly, W. Underground Maps and 'Bus Guides, showing how the Aerodrome can be reached from all parts, free on application.

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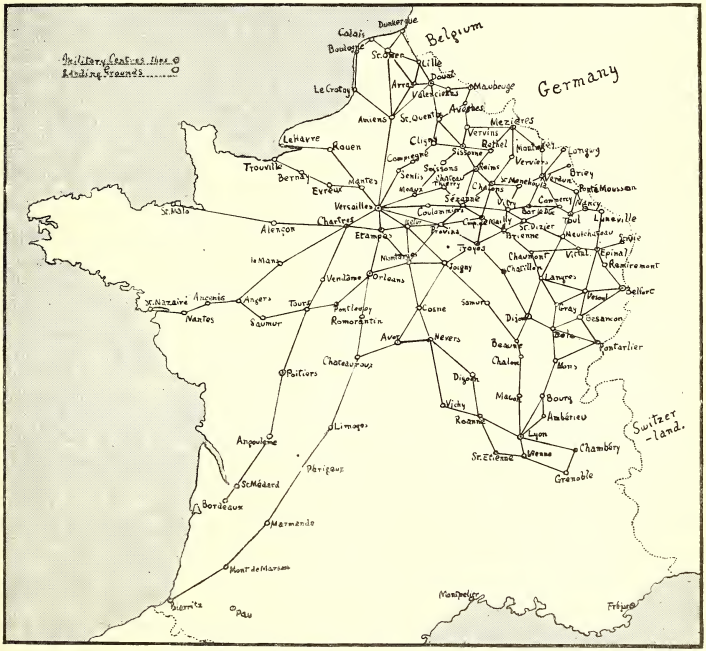
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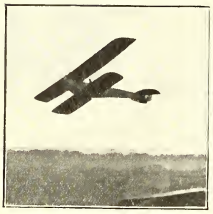
Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, APRIL 3, 1913. No. 14.

A NATIONAL LESSON.



Here are shown the landing grounds existing in France. Thirty-two of these grounds have been founded by the "Comité National pour l'Aviation Militaire" with public subscriptions. It shows the network of "airways" open to French aviators, and may be compared with our own landing places, which number a dozen at most.



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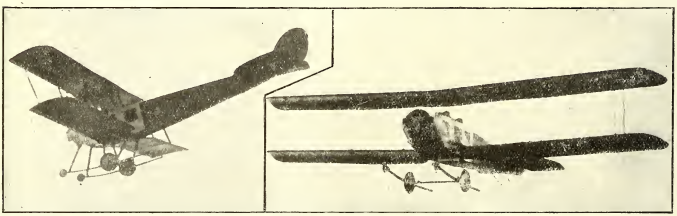
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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London.

Government Policy.

On Wednesday evening last at the meeting of the Aeronautical Society in the Royal United Services Institute, Brigadier-General David Henderson, C.B., D.S.O., Director of Military Training, gave a lucid and eminently fair exposition of much of the official Government's aviation policy so far as the military side of it is concerned. On certain phases of the policy it was obviously impolitic for him to speak—as, for instance, concerning the number of machines it is proposed to purchase, or as to the date by which the present squadrons of the Military Wing, R.F.C., will be brought up to strength. As he pointed out, these are matters rather for political discussion than for debate by the Aeronautical Society. Apart from this, however, he made certain statements which are of the greatest moment, so I advise all those who are really interested in the development of aviation to turn to the report of his speech which appears on page 397 of this issue, and study it before proceeding further.

The two main sections of that speech have been given verbatim. Stenographers are liable to human error, but comparing the report with my own notes, and with my memory of his words, I think the wording, as well as the sense, is accurate. Further, I believe that any open-minded person regarding the whole subject from General Henderson's point of view, will concur cordially with everything he said, so perhaps I may be pardoned for giving myself the satisfaction of setting down in print my entire agreement with him, excepting only on certain matters which admit of another point of view, or seem to require certain explanation. This being more or less the political section of this paper, I propose to discuss these points, and as I have never criticised the Government's aviation policy —as the policy of the Government—in this paper, I can discuss them with the clearer conscience. One is a trifle apt to confuse the follies of an individual or the sins of a clique with the actual policy of the Government. When one talks of "Government" policy one has to include the policy of such men of unimpeachable mental and moral integrity as Lord Morley, Mr. Birrell, and Sir Edward Grey, and, to tell the truth, no one outside the inner circle has any idea what the policy of the whole Government really is.

The Question of Money.

Turning, then, to General Henderson's speech, we find his statement on the financial question distinctly at variance with that of Mr. Hobhouse at the inauguration of the Aero Show, and of Colonel Seely at the Royal Aero Club dinner, and in his speech on the Estimates. Both these politicians assured their hearers that there had been no trouble whatever, and that money was forthcoming whenever it was wanted. General Henderson says "there was an insufficient provision at the beginning of the year"—a fact pointed out in this paper at the time—"for a considerable interval we were unable to give any orders because we had not got any money," and "if you only get spasmodic money you must give spasmodic orders." I think that none with any knowledge of the speakers, and of the facts, will hesitate as to which statement is accurate.

In this respect, therefore, it seems that blame is to be apportioned between the officials at the War Office who drew up inadequate estimates, presumably including Mr. Jack Tennant, the Financial Secretary at the time, the officials at the Treasury who placed further difficulties in the way, and a weak Secretary for War who was afraid to put in a Supplementary Estimate for which there was the very good reason that military aviation was such an unknown quantity a year ago that it was impossible to estimate for its development six months ahead.

One can only hope that General Henderson's straightforward, definite statement will settle this question once and for all. He is to be congratulated on having made it, and the making of it is not the least brave action of a distinguished career.

As to Purchase Tests.

On numerous occasions various writers in this paper and elsewhere have advocated purchase by the Army of all machines which pass certain tests. Some of the writers have added the proviso that the machines should also be of approved design, such as should meet with the approval of practical soldier-aviators, and of the civilian engineers of the Government experimental department. This proviso should, if rightly interpreted, meet General Henderson's objection that officer-pilots might not like the machines when bought. The approval of the pilots is one of the conditions of the tests.

There should be in the R.F.C. a certain number of pilots selected for their mental qualities as well as for their mere skill as fliers, whose duty it would be to give a flying test to various new types of machines before they are even entered for the purchase tests. If two or three of these officers flew a new machine and all disliked it, there would obviously be no sense in wasting time on other tests. They would take practically no extra risk, for the machine would have been flown previously by the firm's own pilots, and these officers' test flights need only be quite short.

If they disagreed, a majority would decide, or other military pilots might be asked for their opinions. If the final decision approved of the machine, it could then go through more searching flying tests in the hands of its own pilot. If it passed, it should be bought at once and put to regular use, and if it was of a type which was worth ordering in quantities, it should be loaded to destruction, not merely strained by a sand load.

The load test should be accompanied by a little bet between the Royal Aircraft Factory and the maker. The latter should name a breaking load, giving an adequate factor of safety. If it broke below this load the maker would have to repair it free. If above it, the R.A.F. would pay him for rebuilding. Such a test would not do more than £200 of damage, and that is nothing for such an experiment, or as an insurance on ten machines and their human freight.

If worked fairly and intelligently on these lines I

can see no objection to a guarantee of orders to makers whose machines pass the whole series of tests.

The Navy already works on the system of trusting to its pilots' judgment when buying, and it works admirably. Naval aviators are rather encouraged to fly civilians' machines and so extend their experience as pilots and their knowledge of different types. Soldiers are expressly forbidden to fly anything but Army machines, even when on leave. Such is one difference already between the Services in the R.F.C., "one and indivisible." The Army system has excellent reasons behind it, but it seems possible to select certain officers as testers of new types. There are at least half a dozen fit for the job whom one could name off-hand. At any rate, such a method of purchase is preferable to relying much on the advice of civilian "experts," who may or may not have their own axes to grind.

A Defence of "Trash."

One now arrives at a portion of General Henderson's remarks which seem to me to call for a more or less personal explanation on my part, and here those who are not concerned with the question may well turn over to a more interesting portion of this paper.

It will be seen on page 397 that General Henderson felt called upon to administer a somewhat severe reproof to those who have attacked the methods by which the aeroplanes of the Military Wing have been procured. He spoke of "columns of trash" in "certain aeronautical papers." As this is the only aeronautical paper which has attacked these methods, the cap fits; and, as the writer of the trash in question, I wear it with as good grace as may be. Perhaps, therefore, I may, as the prisoner at the bar, be permitted a defence, while admitting that, from the speaker's point of view, the reproof was deserved and even desired.

Imprimis, I submit that I have never attacked any Government policy. What I have attacked is departmental muddle, the weakness or credulousness of a Secretary of State, and the actions of a certain clique, who, either to serve their own ends or from sheer unfitness for their positions have produced a state of affairs which has damaged the efficiency of the Royal Flying Corps, endangered the lives of our officer-aviators, and caused a waste of hardly-won money which would, under proper methods, have placed British aviation in the foremost position in the world.

If the real policy of the Government so far as the Army is concerned, is to have only seven squadrons of aeroplanes at some indefinite date, then, as General Henderson says, it is a subject for political discussion. The number is inadequate, and the indefinity of the programme is a danger to the State. Colonel Seely has assumed the responsibility for it, and he will suffer for it in due course.

Referring to what he labelled "the imaginative policy," General Henderson states that he has not found any more straightforward object for the present agitation than to create such dissatisfaction in the country with the present condition of military aeronautics that the Government would be forced to spend a large sum of public money, some of which would naturally go to the aeroplane trade. Reduced to plain, brutal words that means that Mr. C. P. Turner, Mr. J. H. Ledeboer, Mr. H. Massac Buist, and I, aided and abetted by Mr. Joynson-Hicks, Mr. Arthur Lee, Mr. G. J. Sandys, Mr. David Fell, Mr. Alan Burgoyne, and sundry other Members of Parliament, whose remarks have filled a good many columns of various papers, are only concerned with shovelling public money into the pockets of aeroplane manufacturers. Surely, General Henderson cannot have meant that, yet it is harder to find any other meaning than it is to find other reasons for the attack on the present state of military aeronautics.

It may be well, however, to offer a few fairly straightforward reasons for the attack. Leaving our valued allies the Members of Parliament out of the question, speaking only for the Press, and putting the reason at its lowest,—if public money goes to the aeroplane trade, a "healthy industry, necessary for the defence of this country"—*(vide* Colonel Seely, Jan., 1912, *circ.*)—will be established, competition between the various firms who obtain the money will produce better and better machines, and the time will be brought nearer when British aeroplanes will be recognised as, and not merely boasted to be, the best in the world. I submit that that alone is sufficient reason for this sordid attempt to line the pockets of our friends the manufacturers.

Apart from this, and speaking for myself, though I know many of my allies will agree with me, I have an instinctive dislike for waste of human life. Now, it is known that even to-day, for all Colonel Seely's alleged 101 machines, there are more Army aviators than efficient aeroplanes, and I submit that it is endangering the lives of our military aviators to allow several of them to fly one machine, or to allow properly qualified pilots to attempt big flights on machines which have been knocked about by pupils, or to prevent a qualified pilot from flying for months, owing to lack of machines, and then to let him go up on any old machine that happens to be available. Several of the machines I have seen flying have been far more dangerous than the worst of the monoplanes which have been so carefully housed by the Royal Aircraft Factory for this last six months. The suggestion of Colonel Seely that officers would be asked in time of war to fly machines considered dangerous in time of peace is not only heartless but it is bad military economics, for such a process may mean loss of information which is even more valuable than the man who carries it.

Also, owing to the peculiarly mixed motives which influence most human beings, some journalists, despite the disillusioned and sordid cynicism which is the earmark of our species, have been unable to eradicate an old-fashioned out-of-date sentiment called patriotism which leads us to wish this country to be supreme in the air. This happens to fit in with our desire to assist in filling the pockets of our friends. You will perceive that if Great Britain should attain to the possession of the strongest fleet in the air as well as on the sea, by means of really effective and efficient aeroplanes and dirigibles built by a healthy industry instead of by a Government dockyard, we agitators achieve our object by satisfying both our obsolete sentiment and our modern commercialism.

Sentiment enters into our motives in another form, namely, a desire to see some reward for those who have borne the burden in the heat of the day. The men who have spent their time and money, and have risked their lives, on the crazy idea of flying, and have at last produced efficient flying machines, are the men who should profit by a national demand for aerial defence, not Government employees who have been pitchforked in soft billets because they are friends or relations of those in high places.

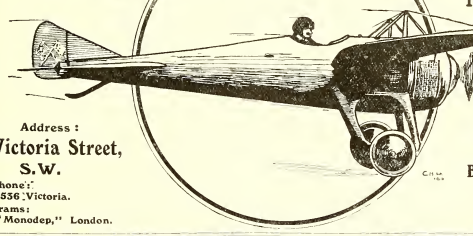
So much for the reasons for this persistent campaign. I merely ask: Do they justify it?

The "Fairy Tale."

So far as this paper is concerned I wish to dissociate it from the suggestion that it is "the fixed intention of the Government to destroy the aeroplane trade and have all the machines built at the Factory." I do not believe the Government has, or had, any such intention, though many of us have been forced against our will to believe that such is the intention of a certain clique. The news, or information—or the lie, if you like the word better—originated in the Factory itself. It may have been merely a piece of bumptiousness in an official who had "got a bit above himself," but, unfortunately, subsequent happenings fitted the idea

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in too many ways for even the personal friends of some of the other officials to continue disbelieving in the plan.

The chief evidence was summed up tersely in the "Observer" last Sunday by Mr. Turner, as follows :—

(*a*) About a year ago Colonel Seely, voicing the opinion of his technical advisers, the people directly concerned with the Factory, declared in the House of Commons that British machines are not so safe as foreign ones.

(*b*) For a long time scarcely any orders for British aeroplanes were given.

(*c*) Meanwhile, the Royal Aircraft Factory, with far greater resources than any private firm, with the facilities enjoyed by a Government workshop, and being under no necessity to make a commercial success, was making experimental machines, failure after failure being the result.

(*d*) The merits of British machines produced by private makers could not be altogether ignored. Orders were given for ones and twos (French makers were receiving orders for 20 and 50 at a time), and points in their designs were sooner or later, reproduced in Royal Aircraft Factory machines.

(*e*) The conditions of the Military Aeroplane Competition were kept back, week after week and month after month, when their early publication was of the greatest possible importance to British competitors whose organisation was, in the nature of things, inferior to that of French makers.

(*f*) Side by side with the competing machines, the B.E.2 of the Royal Aircraft Factory—not an original design by any means, although admittedly a good one—went through similar tests and did quite well; though not so well as the Cody.

(*g*) Both before and since the competitions it transpired that the Royal Aircraft Factory were making a number of B.E. machines for the Royal Flying Corps.

(*h*) This met with vigorous protests, and orders for B.E.'s were given out to private manufacturers.

(*i*) Before last Christmas so few were Government orders that British makers, with one exception, carried on a strictly limited business and relied entirely upon a few private flyers and upon foreign orders. Then the War Office sent out a number of orders requiring delivery within a short period, and naturally they found the industry somewhat unprepared. And the makers were confronted with another difficulty: Government inspectors appointed to pass machines set to work in the most leisurely fashion, and unnecessary delays were caused to certain firms.

(*j*) Colonel Seely believes that British manufacturers have been responsible for these delays, and really it looks as if it were intended that he should believe it; taking one thing with another the circumstances point to a desire to discredit the industry.

(*k*) Colonel Seely now makes the preposterous claim that the Royal Aircraft Factory has produced the best machine in the world. Therefore, the Government have no further use for the engineers and designers who have been doing the "spade work" of aeronautics for the past five years; they have no further use for the private maker; the best machine has arrived: the best brains are at the Royal Aircraft Factory! If there were one grain of truth in the claim that the War Office have got the best machine there might be some shadow of an excuse even for this attitude; but there is not. As good machines are being turned out by British as well as foreign makers, and in three months' time there will be something better still.

These are the chief points in Mr. Turner's indictment. Colonel Seely is not the Government, and is practically, as any but a very able Minister must be, the mouthpiece of his "technical experts." To these points may be added the treatment numerous constructors or their representatives have received at Farnborough—as told in detail in this paper from time to time. And, finally, there is Colonel Seely's statement in the House of Commons that they have the best aeroplane in the world, which they can manufacture in any quantities they please.

Again I say that I do not believe these actions to represent the Government policy, but they fit together too well not to represent someone's policy. If they have happened by chance they disclose a state of muddle which calls for a clean sweep at the Factory and a fresh start.

Incidentally, I must really disagree with General Henderson over his reference to "malicious comment, mostly of a rather personal kind." In all that I have read in other papers, and written in this, I cannot recall anything which could be construed into a personal attack—except on the principle of the cap fitting—until, of course, Colonel Seely at the R.Ae.C. dinner deliberately invited criticism—and got it.

It was not malicious comment which has at last driven home the need for school machines for school work at Farnborough and has resulted in the purchase of several machines excellent for that purpose, and useless on active service. It was not malicious comment which has resulted in the neglected and damaged monoplanes, such as those illustrated recently, being properly stowed and more or less cared for. And it was not malicious comment which has caused such an outbreak of discipline in the Factory that two workmen were put under arrest for making sketches inside the shops. Also it shows a very proper spirit, if it is true as I hear, that the same men were given an increase in wages as a salve to their injured dignity, on being proved innocent.

This discipline is very necessary, for quite recently a friend of mine from Germany gave me some information given him by a German officer about a certain British Government aeroplane which was quite news to me, and turned out to be strictly accurate. There is bound to be leakage, but the less of it there is the better.

I submit that comment which gets people thoroughly on the raw, and produces a rapid effect for the benefit of the community is not malicious but salutary. I do not arrogate to myself the credit for having produced these desirable changes, but if I have helped in a humble way these "columns of trash" have not been wasted.

Save Us From Our Friends.

On one point more I crave indulgence, namely, the suggestion that the agitation has done harm to the trade instead of good. There are two ways of getting things in this world. One is to open your mouth, and shut your eyes, and see what Heaven will send you. The other is to kick, kick hard, and keep on kicking. The outstanding example of the two methods are the systems of land tenure in this country and in Ireland. Here the system is fifty to a hundred years behind the Irish system, where a beneficent Government buys a tenant's land from the landlord, and lets the tenant pay for it in instalments amounting to about half the old rent or less. And why? Simply because the Englishman sat still and sang, "God bless the squire and all his rich relations," while the Irishman conspired, and agitated, and declared an end to the close time for landlords. A few perpetrators of agrarian outrages were hanged, and a few agitators went to prison, they all became martyrs, and the community, as a whole, benefited. Some very good landlords and agents were shot by accident, and the agitation probably frightened away many English investors who would have made excellent landlords, of the English kind. But to-day the bulk of the Irish land belongs to Irish proprietors, under the Government, and most of them are happy and prosperous. I trust you follow the analogy.

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There is a story of the Irish Land League times which tells how an Irish landlord, resident in England, wrote to his land agent, "Tell the tenants that if they think they can intimidate me by assassinating you, they're jolly well mistaken." Similarly, certain people might say that if we think we are going to intimidate them by assassinating Colonel Seely—in a strictly political sense, of course—we are equally mistaken. Still, well-directed agitation with a good purpose behind it never failed yet, and we live in hopes. One cannot make omelettes without breaking eggs, and—to mix the metaphor a bit—it may chance that one kills the goose that lays the golden eggs, in making the omelette. So one may frighten away some capitalists, as General Henderson suggests has happened, but that is a trifle if the Government does its obvious duty. Certain individuals may go under in the fight—Mr. Flanders, I take it, by his speech on Wednesday, virtually committed hari-kiri on the steps of the War Office. Some others of us will acquire some excellent enemies—for whom Heaven be praised. But if the net result is an adequate supply of the acknowledged best aeroplanes in the world for the largest and best-manned air-fleet in the world, none of us will regret it.

Finally.

Just to wind up with, I must also differ from General Henderson's remark that "there are stories about" which "tend to the idea that the affairs of the Military Wing are mismanaged in the most imbecile way." Far from it, so far as the purely military aspect is concerned. It is ineffective because it has neither the men, the machines, nor the transport. That is because of lack of money, as General Henderson stated. But it is not inefficient. What there is of it is wonderfully efficient. If one took the eighteen best machines, chiefly from among the despised monoplanes, the twelve best pilots—several of whom have not been able to fly for a long time for lack of machines—and all the existing transport, one could probably raise one squadron ready to "wipe the eye" of the best France could put up. I hope to live to see an adequate number of such squadrons, say, fifty or so, and I feel sure the excellent organisation work now being done will make it an easy matter to form and handle those squadrons when the money and machines are forthcoming. We agitators hope we are hastening that time. I can quite imagine that Moses became intensely bored with the people who insisted on helping to hold up his arms during that famous march past in review order of the Children of Israel, so one cannot feel aggrieved when one is reproved for endeavouring to assist in a somewhat similar capacity what time the Royal Flying Corps progresses slowly towards the Promised Land of effectiveness in numbers and equipment.—C. G. G.

The Royal Aero Club.

The result of the ballot for the nine vacancies on the Committee was as follows:—

Griffith Brewer,	Prof. A. K. Huntingdon.
Ernest C. Bucknall,	F. K. McClean,
John D. Dunville,	Alec Ogilvie,
Col. H. C. L. Holden, C.B., F.R.S.	Mervyn O'Gorman,
	C. F. Pollock.

At the Committee Meeting on March 18th the following Aviators' Certificates were granted:—438, Sergt. William George Stafford (Maurice Farman biplane, Central Flying School, Upavon); 439, Sergt. Edward J. Street (Maurice Farman biplane, Central Flying School, Upavon); 440, Lieut. Llewelyn C. Hordern (Lancashire Fusiliers) (Deperdussin monoplane, Deperdussin School, Hendon); 441, 2nd Lieut. Charles G. G. Bayly, R.E. (Caudron biplane, Ewen School, Hendon); 442, Eardley H. Lawford (Caudron biplane, Ewen School, Hendon); 443, Sergt. H. R. Vagg (Short biplane, Central Flying School, Upavon).

Letter from Aero Club de France, requesting the Club to give its sanction to the issuing of an aviator's certificate to Lieut. F. L. M. Boothby, R.N., was read.

The "Arrangement" with the Press.

It must be confessed that Colonel Seely's statement in the House of Commons that the Press had been induced to keep silence about the doings of the Flying Corps was rather puzzling, but during the last few days the writer has discovered that the "arrangement" to which he referred was really an official communiqué to certain papers asking them to make no reference to the new anti-airship gun to which Colonel Seely himself referred in his speech and to the new projectile to be used with the said gun.

As a matter of fact, quite a good deal has been known about this gun and its projectiles for a considerable time by certain of those who are in touch with such matters, but naturally no official request was needed to prevent a mention of it in print. However, as Colonel Seely has now disclosed its existence himself, perhaps he would like a description published.



Captain Mark Kerr, R.N., M.V.O., with Mr. Gustav Hamel on Miss Trehawke-Davies' two-seated Blériot monoplane 70-h.p. Gnome) at Hendon, March 30th.

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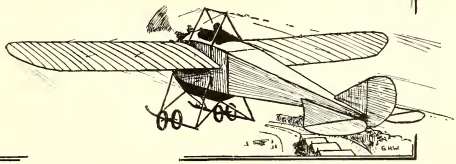
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As The Aeroplane goes to press, the announcement is made of two new aviation prizes put up by the "Daily Mail." The flights by which these prizes are to be won are by far the most impressive yet proposed, namely, the first flight round Great Britain in three days on an All-British hydro-aeroplane for a £5,000 prize, and the first flight across the Atlantic for a £10,000 prize. The "Daily Mail" is to be congratulated heartily on having fixed on these two particular feats.

It is highly probable that the former prize will be won during this year, and it is possible that the latter prize will also be won within the next six months, for it is known that several firms have already worked out designs for a trans-Atlantic machine, and, given the luck of a favouring wind and three days' fine weather, the performance should be quite possible, especially as apparently competitors will be permitted to alight for replenishments of fuel. It should even be possible with modern engines and sufficient money to be able to do the whole trans-Atlantic flight without replenishing, for, as was pointed out in The Aeroplane some time ago, as the big load of fuel is consumed, and the machine grows lighter, the rate of consumption of fuel is lessened.

The conditions of the £5,000 prize are particularly to be commended, because they specify that the machine shall be of entirely British construction.

There is no doubt that the sea-going aeroplane has, at any rate, in the immediate future, much greater possibilities in this country than the land-going machine, and the "Daily Mail" is doing a national service by encouraging the production of this species, because of the very great part the "waterplane" will play in the aerial defence scheme of this country. Big waterfliers are capable of acting offensively against hostile scouts of the T.B.D. class, and against unarmoured transports. Smaller and faster machines are necessary as scouts, and as weapons against dirigibles. Anything that encourages their production is of service to the nation.

The offer of these prizes is the best thing the proprietors of the "Daily Mail" have ever done, even including the good wrought by the "London-Manchester" and "Circuit of Britain" flight.

The British Empire Michelin Cup No. 1.

The Michelin Tyre Company has presented to the Royal Aero Club of the United Kingdom, for competition by British aviators, a trophy of the total value of £500.

Annually, for five years, a replica of this trophy, together with a sum of £500 in cash, will be given to the successful competitor. The following are the chief conditions:—

Conditions.

1. The winner for the year 1913 shall be the competitor who shall have accomplished the longest distance on an aeroplane in flight round the course, Brooklands, Hendon, Farnborough, on any one of the following dates:—

Saturday	April 5th	Saturday	July 5th
Thursday	April 17th	Thursday	July 17th
Saturday	May 3rd	Saturday	August 2nd
Thursday	May 15th	Thursday	August 14th
Saturday	June 7th	Saturday ...	September 6th
Thursday	June 19th	Thursday ...	September 18th

If, in the opinion of the Club, bad weather has prevented the competition being held on any of the above fixed dates, the Club may add other dates instead.

2. Flights may be between 7 a.m. and one hour after sunset.

3. No replenishments of oil, fuel, etc., will be permitted.

4. No repairs may be carried out after a start has been made.

5. Competitors shall make periodical compulsory stops of not less than five minutes, with engine stopped, on completing an entire circuit of the course plus one section, e.g., starting from Brooklands the competitor would pass Hendon, Farnborough, Brooklands, and alight at Hendon. His next flight would be from Hendon, passing Farnborough, Brooklands, Hendon and alighting at Farnborough, and so on.

6. Landing at any point other than a proper landing place terminates a flight, and the competitor will then be credited with the mileage of the sections which he has completed, in conformity with the regulations.

7. A minimum distance of 300 miles must be accomplished.

8. Starts may be made from any of the three points of the course.

9. The entrant, who must be the person operating the machine, must be a British subject, flying on a British made aeroplane, must hold an Aviator's Certificate, and must be duly entered on the Competitors' Register of the Royal Aero Club.

10. The complete machine, and all its parts, must have been entirely constructed within the confines of the British Empire, but this provision shall not be held to apply to raw material.

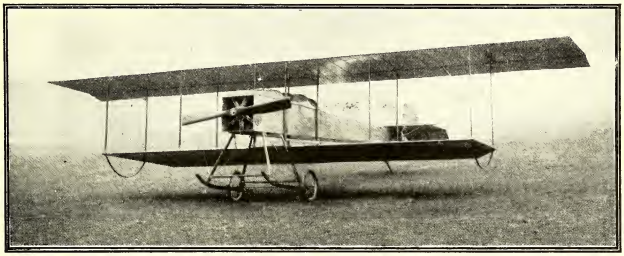
11. An entrance fee of £1 must accompany every notification of an attempt, and at least three clear days' notice must be given to the Secretary, Royal Aero Club, 166, Piccadilly, London, W. A competitor must further deposit a sum of £10 on account of expenses, if any, of officials. Any balance not so expended will be returned to the competitor.

[The general idea of the new rules is good, but the course chosen can only be described as criminal for the purpose. From Brooklands to Farnborough is one of the worst pieces of country in England to fly over. For miles there is no landing ground, and any committee which forces a competitor to fly over such country with a failing engine, or hoping to finish the "section" before he runs short of fuel, in a duration competition such as this, deserves to be made fully responsible for any accident that occurs. There is not even a choice of courses, as last year.—C. G. G.]



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

The Army Estimates and Aviation.

BY W. E. de B. WHITTAKER.

There have been few contrasts in the recent life of Parliament so striking as that visible to the world during the last fortnight. Two Ministers of State have introduced the estimates of their departments for the coming year. Similar in essence though the subjects were—they were both in intimate connection with national defence—no two speeches could have differed more than those delivered by Colonel Seely and Mr. Winston Spencer-Churchill within the space of one week. The former a bombastic exposition of countless unrealities, the latter a dignified and reasoned statement of things as they are. Modesty and moderation will always claim the attention of the thinking world.

It is not possible for any man in a public position of the importance of that occupied by Mr. Churchill to please all parties in the country. Opinions differ widely as to the best methods to be pursued. The less a man knows, the more confirmed and unalterable are his opinions. Knowing this, it is difficult for a statesman to single out from the many public agitations those which require serious and earnest attention. And the position of a member of the Cabinet at this moment is, perhaps, particularly difficult. The "Peace at any Price" Party was never stronger than it is now. At the same time, those who read the signs in the skies demand increased armaments and larger trained forces. What others do we must do.

But the question of most interest to the readers of this paper is the development of the aeronautical service. On the proper expansion of this force depends the ultimate safety of the Empire. The mastery of the air is of equal importance with the mastery of the sea or the land, for it possibly gives the key to both.

Mr. Churchill announced in his statement that the total sum allocated to aeronautics in the Naval Estimates was about £321,000. He gave no detailed explanation of the various expenses involved. He showed, on the other hand, no desire to give a fictitious size to the provision made for aeronautics by adding to it a number of extraneous charges not essentially connected with that branch. In the Army Estimates the daily pay of the personnel of the Royal Flying Corps forms part of the sum allotted to aviation, though the greater portion of it should be considered part of the general Army Vote. In the Naval Estimates, on the other hand, that portion of the pay which concerns the navy as a whole is kept outside the aeronautical account. A naval officer or seaman, whether he be in a ship or in the Royal Flying Corps, still receives his ordinary pay, apart from special allowances.

I have made an abstract of the different aeronautical charges appearing in different parts of the Naval Estimates. They are entirely concerned with special payments to personnel and to the erection of works and buildings. The sums allotted to the purchase of airships, hydro-aeroplanes, aeroplanes, and transport are hidden away in the total of some large vote—partly in Vote 8.

To take the figures first which deal with the Royal Flying Corps as a whole, there is under "Vote 8, Section F, Inspection of Contract Work," a "Contribution to War Department towards cost of joint Military and Naval School of Aviation" amounting to £25,000 as against £14,000 last year. This is some indication of the proportion of the prospective increase in the activities of the Central Flying School. This allowance is half the total running expenses of the school, and bears no reference to works and buildings. Under Vote 10, "Works, Buildings, etc., Sub-head B, Part I, New Works, etc.," there is a re-vote of £1,000 towards the fixed contribution of one-half of the total cost of the school buildings. So far, £15,000 of this contribution has been spent, leaving, after the next financial year, the necessity of spending a further £4,000. The total naval capital expenditure on the school will then be £20,000.

The next charges to be considered are pay and allowances. The Air Department, being of special nature, is paid entirely out of the aviation funds. The payments are as follows:—

One Director (captain, R.N.)	£950
Two Assistants (commanders, R.N.), full pay; special allowance, 2s. 6d. a day; lodging allowance, £50; provision allowance, £24; (or lieutenants, R.N., £400 a year)	921
One Engineer Lieutenant, R.N. (senior list), full pay; consolidated allowance, £150	442
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In addition to the ordinary daily pay of the service, or in substitution for it, each officer and man in the Royal Flying Corps receives special pay and allowances. For instance, each officer aviator receives 8s. a day flying pay, in addition to naval pay. All these extra payments appear under Votes 1 and 7. Under



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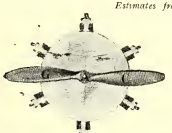
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"Vote 1, Wages, etc.," appears under "Miscellaneous" to "Naval officers and men serving or under training in the Royal Flying Corps, Remuneration additional to Naval Pay," £8,000. Later in the exposition of the same Vote there appears an item allotting £2,000 as "Remuneration additional to Marine Pay while serving or under training in the Royal Flying Corps" to officers and men of the Royal Marines.

The pay of the officers and men of the Royal Naval Reserves employed in the Royal Flying Corps appears under Section A of Vote 7, where £2,000 is set aside for this purpose.

The remaining sums specified for aeronautics appear under "Vote 10, Works, Buildings, etc., Sub-head B, Part I, New Works," and are as follows :—

Sheerness : Accommodation for hydro-aeroplanes	£6,600
Accommodation for aeroplanes (£15,000 was spent last year.)	4,000
Accommodation for hydro-aeroplanes	22,000
Accommodation for airships (including a double shed on the Medway) (Amount spent last year, £3,000.)	52,000

There is elsewhere in the Estimates under "Vote 11 Subhead Z" a sum of money set aside for "Miscellaneous Payments and Allowances," amounting in all to £28,000. During last year some of the money voted under this subhead was used for aviation purposes, and it may be so again.

This concludes all the references to aviation I have been able to find in the Naval Estimates. To summarise them the amounts and total are as follows :—

Central Flying School, annual charges	£25,000
Central Flying School, works and buildings	1,000
Air Department	2,371
Payments to Personnel, Naval Wing, R.F.C.	12,000
Works and Buildings	84,000
	£124,371

Subtract this sum from the £321,000 spoken of by Mr. Churchill, and there is about £197,000 left with which to purchase a rigid dirigible, more aeroplanes and hydro aeroplanes, transform a coast defence cruiser into a mother ship of aviation, and provide a certain amount of land transport. There are also countless little charges to liquidate throughout the year, such as compensation for damage done, travelling expenses, wastage on purchases, spare engines, and so on.

A rigid dirigible cannot cost much less than £50,000. It will be necessary to purchase at least 100 aeroplanes during the year if wastage is to be allowed even on a small scale. This number will cost anything from £130,000 to £150,000. It will thus be seen that if Mr. Churchill intends to carry out his declared programme he has not provided sufficient money.

It is, of course, a well-known fact that he can have as much money as he desires for this service, and it may even be allowed for under some other vote, but would it not be well in the present stage of crisis if the First Lord of the Admiralty would take the public further into his confidence? None can complain of any lack of candour in the form of his official statement, but special situations require special methods.

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty Appointments, March 17th.—Lieuts. R. A. Wilson, W. R. Crocker, and W. C. Hicks to the "Actæon," additional, for training in airship work.

Admiralty Appointments, March 28th :

Lieutenants—Christopher E. Maude, Francis G. Brodribb, William G. Sitwell, Charles H. K. Edmonds, Augustine W. S. Agar, and Arthur B. Gaskell, to the "President," additional, for course of instruction at Central Flying School, to date May 17th.

Royal Marines.—Captain Henry Fawcett, R.M.L.I., and Lieutenant George H. V. Hawthorn, R.M.L.I., to the "President," additional, for course of instruction at Central Flying School, to date May 17th.

Admiralty Appointment, March 31st :

Royal Naval Reserve.—Sub-Lieutenant James L. Travers to the "Actæon," additional as flying officer for Calshot Naval Air Station, to date March 29th.

From the "London Gazette," March 18th :

War Office, Regular Forces.—Royal Flying Corps, Military Wing.—Second Lieutenant Thomas O'B. Hubbard, Special Reserve, to be a Flying Officer ; dated March 4th, 1913.

From the "London Gazette," March 26th :

Special Reserve of Officers, Royal Flying Corps, Military Wing.—Evelyn W. C. Perry to be Sec. Lieut. (on probation) ; March 26th, 1913.

FRANCE.

On March 21st, at Mourmelon, Lieutenant-aviator Mendes finished the final test for the military brevet by a flight from Chalons to Amiens and back on a Hanriot monoplane. He finished his flight in pouring rain.

On the same day there were to have been combined manœuvres at Nancy with the Toul and Nancy escadrilles of aeroplanes engaged. The rain and wind, however, were so high that of all the machines only one—a Henry Farman biplane (80-h.p. Gnome), piloted by Corporal-aviator Foulquier, of the Toul escadrille, arrived at Nancy. He left Toul at 11 a.m. and reached Nancy at 11.25 a.m.

The escadrille of Farman biplanes which recently travelled by way of the air from Biskra to Tunis is to return to its base by rail.

Some figures have been published which throw some light on the amount of work done during the past year by the aviation corps of the French army. In 1912, in the course of 2,380 flights across country, a distance of 314,000 miles has been covered by 200 aeroplanes. On March 1st, 1913, France had 200 efficient military pilots (182 officers and 27 N.C.O.'s), according to the report made by General Hirschauer to the Commission on Aviation sitting at the Luxembourg. This excludes innumerable reservist pilots and civilian aviators.

A report has just been issued tabulating the work done by the Comité National pour l'Aviation Militaire since it began its work just over a year ago. The committee has presented or caused to be presented during this period seventy-two aeroplanes to the French army. The types and numbers are as follows : 11 H Farman biplanes (two-seaters, 80-h.p. Gnomes), to Deperdussin monoplanes (two-seaters, 80-h.p. Gnomes), 5 Deperdussin monoplanes (single-seaters, 50-h.p. Gnomes), 10 Hanriot monoplanes (single-seaters, 50 h.p.-Gnomes), 10 Nieuport monoplanes (two-seaters, 50-h.p. Gnomes), 5 Bréguet biplanes (two-seaters, 70-h.p. Renaults), 5 Bréguet biplanes (two-seaters, 85-h.p. Salmsons), 6 Maurice Farman biplanes (two-seaters, 70-h.p. Renaults), 4 Borel monoplanes (single-seaters, 50-h.p. Gnomes), 2 Borel monoplanes (two-seaters, 80-h.p. Gnomes), 2 Morane monoplanes (single-seaters, 50-h.p. Gnomes), and 2 Caudron monoplanes (two-seaters, 80-h.p. Gnomes).

Further, this committee has paid for the training as aviation pilots of twenty-eight pupils, all of whom are now in one service or the other—one of them being in the naval aviation corps. It has also been instrumental in the formation of thirty-two landing-grounds in different parts of France.

The escadrille at Nancy is now up to strength. Lieutenant Sallier joined the centre on March 27th, flying from Mailly on a Farman biplane, with Lieutenant Ardouin-Dumazet as passenger.

M. Sommer delivered last week to the army the two Sommer

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biplanes (100-h.p. Gnome engines) ordered some weeks ago. These are the last machines to be built by the Sommer firm.

On March 28th, at Verdun, Lieutenant-aviator Bresson (Colonial Infantry), attached for aviation, was killed through a sideslip. He fell about fifty feet.—W.

GERMANY.

There are signs in the air of an impending large increase in the personnel of the aeronautic services. In the public journals there appears an advertisement asking for men to pilot military dirigible balloons. Such recruits are to be attached to the Aerostation Battalion at Tegel. Preference is given to men who have served in the army or navy and less than 28 years of age.

An examination has been made of the wreck of the Zeppelin IV at Carlsruhe. The mitrailleuse mounted on the gun platform in the centre of the upper surface of the balloon is undamaged, as are all the instruments in the nacelle. The engines and propellers are destroyed. H.R.H. Prince Henry of Prussia visited the wreck on March 20th. The ground is guarded by troops and no detailed photographs are permitted.

The firing practice made from L.Z.16 has been so satisfactory that the Ministry of War intend to have gun platforms fixed on the upper surface of all Zeppelin dirigibles.

Another class of thirty-five officers report at Johannisthal on April 1st to begin a course of training in aviation.

Captain Metzing, of the Imperial Navy, has been posted to the command of the naval aerial cruisers. Three naval lieutenants are appointed to the command of three dirigible balloons destined to the navy.—W.

Great preparations are being made to get the new naval aero establishments in full working order by April 15th, when 150 officers and men go up to their station at Fuhlsbüttel with Captain Metzing in command. The marine Zeppelin L.1 will make its home at Fuhlsbüttel, and L.2 will follow eventually as soon as the double hangar is ready to house the two cruisers.

The new military Zeppelin No. 16, listed at the War Office as Z.IV, has taken up its station at Baden-Oos for the present, instead of Kœnigsberg, on the Russian frontier, where it would have gone had "Ersatz Z.1" remained unharmed. It left Friedrichshafen at night and passed Strassburg between 1 and 2 o'clock a.m., the thudding propellers arousing the residents in its line of route. Seen by the faint light of the city lamps, the cruiser showed as an indefinite dusky body. The newspapers state that the "phantom airship of the Englishmen has come true at last."

The aerial parade planned for March 7th on the Berlin-Johannisthal aviation ground, before the German Emperor and the Prince Regent of Bavaria, was shorn of its beauty by the gusty weather and the fact that the Emperor was unable to attend. Three dirigibles and 62 aeroplanes were to have been in air at the same time. As it was, a number of aviators flew and the Prince-Regent was greatly interested, remaining for two hours. The navy ship "L1," and the Parseval stationed at Johannisthal received much attention, and the Prince conversed for some time with the Russian Wright aviatress Princess Tschakowski. Among the men who carried out flights were Lieutenants Engwer and von Thunn on Rumplers, Hirth (Albatros), Stiploschek (Jeannin), and Abramowitsch (Wright).

Manœuvres on a large scale are to commence very shortly, all the dirigibles stationed at Metz, Baden-Oos, and Cologne being ordered to hold themselves in readiness, and a number of aeroplane pilots have received similar notices, as the main idea of the manœuvres is to test the extended joint working of both kinds of aerial vessel, as well as to fully educate officers and crew with a view to the proposed increase of aerial detachments, rendered imperative by the new Bill about to be placed before the German Diet.

The new Auxiliary Bill presented to the German Diet as part of the Air Budget demands a sum of 20,000,000 marks for military purposes. This amount will not be used for any specified number of airships and aeroplanes, but is to be placed at the disposal of headquarters to be used as necessity demands, with special heed to hangars, gas-works, the building of Parseval airships, etc. It is rumoured that ten vessels of a rigid type are to be contructed as quickly as possible, but these reports cannot be verified until the War Office states its intentions when the Bill is presented for discussion.—B.

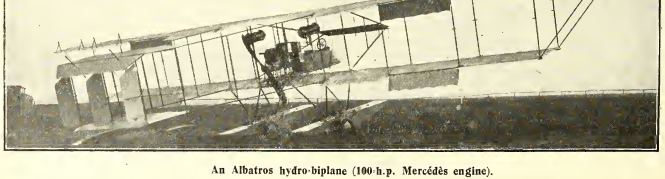
AUSTRIA.

The Archduke Charles Francis of Austria has published an appeal for subscriptions to create an Austrian aerial fleet on a large scale. H.R.H. says: "We live in strenuous times, and everybody acknowledges that a capable army ready for the defence is the best guarantee for peace. Other nations, recognising the fact that an aerial fleet is an absolute fighting necessity for army and for navy, have commenced long ago to extend their military aviation department. Austria, too, can be without these modern aids no longer. The thought of the creation of an Austrian aerial fleet should strike root in the cottage as in the workshop, in the house of the burgher as in the palace. All differences of party and nationality must cease when all the people of Austria take part in this one great work."—B.

ITALY.

The military aeroplane competition starts on April 1st at Mirafiori, and thirty-two aeroplanes have been entered. The types are as follows. The number of machines entered by each firm is placed in parentheses after the name: Société Astra, Turin (4); Société Caproni, Vizzola (4); Société J. A., Milan (4); Société Lombardia, Milan (3); Société Turini-Bergondi, Milan (3); Les Usines Wolsit, Legnano (3); Bobba Cesar, Casalmonfoocats (2); Société Chiribiri, Turin (2); Société Garardini, Milan (2); Société Macchi, Varese (2); La S.I.T., Turin (2); M. Castellani, Turin (1). Twenty-two of these are biplanes. Among the pilots engaged are to be Messrs. Bobba Paolucci, De Dominicis, Rossi, Ramazzotti, Maffei, Amerigo, Perreyon, Slovorosoff and Espanet.

The Ministry of War has decided to form a military aviation centre on the Talledo aerodrome at Milan. A large hangar of reinforced cement is to be built capable of holding the three



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escadrilles of aeroplanes attached to the centre. Each escadrille is to be of nine aeroplanes.—W.

Lieutenant de Carolis, perhaps stimulated by Mons. Perreyon's presence at Turin to deliver two Blériots, built by the S.I.T. firm of that city, to the Government, has succeeded in surpassing Capt. Bongiovanni's altitude record at Aviano and so raising the Italian height record to 2,700 metres.

The Admiralty Parseval—capacity 11,000 c.m.—has begun her trials, and it is announced that two other vessels of this type are on order.

The transport of P.2 from Rome to Campalto is to be undertaken in pursuance of the scheme for concentrating the greater part of the aerial defence near the frontiers. A station of hydro-aeroplanes is also under consideration for the Lake Garda across which the Eastern frontier line passes.

On March 19th, Captain Gustave Moreno, while practising a spiral dive for the superior brevet on a Nieuport at Malpensa, slipped from 200 metres, death being instantaneous.

The three motors accepted for trial by the Air Battalion, after bench tests consisting chiefly of longish runs with the crank shaft out of the horizontal, will be fitted to the aeroplanes in use at the different training camps to complete the practical part of the testing under observation.—T. S. H.

BELGIUM.

The commission controlling colonial aviation has the intention this year of making experiments with hydro-aeroplanes on a part of the Congo. If successful, the flights will be extended over other sections of the river.—W.

RUSSIA.

The naval and military aviation station at Sevastopol has now in its possession, according to reports, 110 aeroplanes of all types, amongst them being 20 Curtiss hydro-aeroplanes. Three hundred officers and men of the Sevastopol garrison are qualified aeroplane pilots.

Lieutenant-aviator Dybovsky, who made so splendid a flight from Sevastopol to Petersburg in the early part of last year, is now chief instructor of the military aviation school at Sevastopol. On March 21st he was flying along the Crimean coast at a height of 7,000 feet when he saw a number of eagles flying near him. He fired at them with a revolver or rifle (the report is not clear as to which) and shot one, which fell out of sight. He then returned home, when his fever abated.—W.

GREECE.

Lieutenant-aviator Moutoussis was flying a Maurice Farman hydro-biplane on Sunday, March 16th, over the Bay of Phaléne when his lifebelt caught the control handle. The machine at once upset and fell into the sea. The aviator was rescued.—W.

TURKEY.

Lieutenant Krey, formerly a German army aviator but now in the Turkish service, sends an interesting account to a Berlin newspaper of a scouting performance he undertook on March 18th with General Enver Bey. He ascended at San Stefano and flew to Tarfa, on Lake Derkos, remaining at 1,200 metres above the enemy. The flight lasted for an hour and a half, and served its purpose fully in ascertaining the strength of the opposing artillery. Captain Fessa Bey, with Captain Kemal Bey as passenger, was shot at by the Bulgarians when about 1,000 metres high. The two officers were able to give a correct account of the belligerent forces and positions, although they were fortunate to escape the fire as they were flying unusually low.—B.

THE ARGENTINE REPUBLIC.

On March 21st, at Buc, M. Fourny took a Maurice Farman hydro-biplane through its reception trials for the Ministry of War. Despite the high wind—from 35 to 40 miles an hour—the tests were carried through successfully.—W.

The New German Army Bill and Aviation.

The German Government, in response to the recent military activity in France, have introduced an Army Bill into the Reichstag which resembles in its general principles the Naval Bill of some twenty years ago. Its general details have no special interest for the aeronautical world. There is, however, set aside in the Bill, under the heading of non-recurring expenditure, an allotment of 79,000,000 marks for military aeronautical expansion. This proposed grant is entirely apart from the provision made in the ordinary army estimates. Can Colonel Seely and Mr. Churchill, in the presence of this veiled threat to the world's peace and the proper balance of power, still argue that there is little need for a great expansion of our aerial forces?

Our German Rivals.

The Editor wishes to acknowledge the courtesy of the management of the Albatroswerke G.m.b.H. of Johannisthal, who have sent, in answer to a request, the photographs of the firm's latest types of monoplane, double-monoplane—or tractor biplane, and propeller biplane. All these machines are fitted with 100-h.p. Mercédés engines. The following particulars of the capabilities of the machines are given: Biplanes—speed 54 and 60 m.p.h., rate of climb 500 metres (1,600 ft.) in 5 mins. and 6 mins. Monoplanes—speed 60 m.p.h., climb 1,600 ft. in 4 to 5 mins.

It will be noted that the monoplanes (single and double) are of the "Taube"—or pigeon—type, similar to the Weiss, Etrich, and Handley Page, and so are calculated to give a measure of inherent stability.

Mr. de Havilland's Accident.

The accident to Mr. de Havilland last Thursday on Colonel Seely's much vaunted 91-mile an hour aeroplane is to be sincerely regretted, for it will deprive the Royal Flying Corps of one of its best pilots for quite a considerable time. One learns that Mr. de Havilland sustained a broken jaw and a broken ankle, besides other minor injuries. All will wish him an early and complete recovery, for his modesty and good nature have made him very popular in the R.F.C.

As was mentioned in this paper last week, the machine in question was said by experienced aviators to be very unstable, and apparently the accident was entirely due to this cause. A well-known designer attributes the accident largely to the fact that the monocoque type fuselage, which was used in this machine, requires comparatively large vertical fins above and below in order to give it what in France is known as "stabilité de route," otherwise, as the engine is switched on and off, the tail of the machine flicks round and the whole machine side-slips before the pilot can regain control. These fins were apparently omitted from this machine, and their absence is largely accountable for the accident.

Apart, however, from this, it must be fairly evident that given two machines of the same surface built for high speed with a very powerful engine a monoplane will have a bigger span than a biplane, and, therefore, will offer more resistance to the torque of the engine and propeller, owing to the wing tips having a greater leverage over the body, and consequently, although small biplanes can be built for high speeds, the monoplane seems preferable. When it comes to very big machines of high speed then, of course, the advantages of the biplane in other directions make themselves felt.

Mr. Cody's Destroyer.

The dirigible destroyer to which Mr. Cody referred when speaking at the Society of Inventors last week consists of a bomb which burns rather than bursts, towed at the end of a cable whose length is variable at will. To the bomb are attached triggers in the shape of fish-hooks. By towing the cable below an aeroplane it may be brought across a dirigible so that the bomb hooks itself into the envelope, explodes and sets fire to the machine. The detail mechanism of the apparatus must, of course, be kept secret for the present, but there is little doubt that with practice Mr. Cody's invention would prove a very deadly weapon, always provided we were equipped with a sufficiency of powerful aeroplanes.

The Dunne in France.

The first French Dunne biplane built by the Astra Co. and fitted with a 70-h.p. Gnome made a successful debut on Thursday last. Mr. Dunne himself piloted the machine, took it straight up to 600 ft. without any preliminary trial, and made an excellent landing. The spectators at Villacoublay were much impressed, especially by its climbing and banking.

British Lights in Germany.

It is interesting to learn that Messrs. C. A. Vandervell and Co., the famous electrical engineers, have already supplied their lighting sets to German army airships, and are fitting similar equipments to certain German military aeroplanes. In each case powerful head-lights specially made for the purpose have been fitted. Strangely enough, apparently very little of this work has been done in this country as yet.

The Effect of the Government Policy on the Technical Industry.

Although the meeting of the Aeronautical Society on Wednesday of last week was so sparsely attended, it was undoubtedly one of the most momentous in the career of the Society. After the Annual General Meeting the subject for debate was "The Effect of the Government Policy on the Technical Industry." The mere title suggested an attack on the Government policy, and in consequence the majority of constructors interested in Government orders evidently thought it policy to stay away, having in mind, no doubt, the fact that, in the phrase of the common policeman, anything they might say would be used in evidence against them.

Naturally one thought that the speeches would be more of a condemnation of the Government policy than a discussion thereon, but it was rather much to expect manufacturers dependent for their living on the goodwill of a Government Department to express their thoughts freely in open debate, and, as a matter of fact, only three aeroplane constructors and two engine constructors were present.

General Ruck, who presided, endeavoured to lead the discussion into the strait and narrow path of propriety by suggesting points on which the opinions of constructors would be of value. He said there was to have been a lecture by Capt. Samson, R.N., but the Admiralty thought that it was not in the interests of the Service that the lecture should be delivered, so the present discussion was arranged.

The Government programme might be divided into three heads—those connected with aeroplanes, engines, and airships. As to aeroplanes, would manufacturers build to War Office design, or continue their own, and could they do so at the rate indicated by Colonel Seely? Were they prepared to build a fighting machine? If so, manufacturers would, he supposed, require a certain number of orders, and would need to carry out expensive experiments.

As to the proposed engine competition, he asked whether the trade approved of one big prize and one order, or of more prizes and a distribution of orders. He enquired whether makers of airships should be asked to build on a lump sum or to work on a percentage profit, and he also enquired whether those present considered the number of aeroplanes the Government intended to buy was adequate. This last question struck one as being rather hard to answer in view of the fact that according to Colonel Seely the Army already has more aeroplanes than it requires, and consequently need not buy any at all, and that no intimation has been given of intended purchases. General Ruck also enquired whether the industry could assist in the training of personnel.

Mr. Flanders Speaks His Mind.

The first speaker was Mr. Howard Flanders. As most people know, Mr. Flanders has spent his entire private means during the past four years on evolving a satisfactory aeroplane, during which time I can state from my own personal knowledge that he has lived on a considerably less sum per week than he has been paying his own mechanics. Last year Mr. Flanders and some friends started the firm of Howard Flanders, Ltd. They received certain War Office orders for monoplanes, and though these machines were admittedly late in delivery, they were not so late as those of other firms who have had repeat orders. The machines acquitted themselves well in their tests, yet for one reason or another no further orders have been placed, and the firm has practically been compelled to shut down. Can one, therefore, blame Mr. Flanders for speaking bitterly?

Mr. Flanders said it would be a good thing if we first had a clear understanding as to what the Government Policy really was. For the Naval Policy he could not speak, as he knew nothing of the lines on which the Navy would work. But the new Air Department at the Admiralty had done more in two months than the War Office had done in a year. The Army Policy as outlined by Colonel Seely was only too clear. In his statement on the Army Estimates, on Wednesday last, after speaking of the many virtues of the machines built by the Royal Aircraft Factory, machines which Mr. Flanders admitted combined many of the excellent points from other machines, Colonel Seely said, "I have indicated that we have in our judgment the best aeroplane in the world, which we ourselves have devised, and can manufacture in any number that we please." That at least was something definite.

Mr. Flanders reviewed the commencement of the present phase of aeronautics in this country, and said the names which stood out first are Messrs. A. V. Roe, Cody, Barnwell and Willows. They persevered and faced privation and abuse simply owing to the fascination with which aeronautics has for all who start practical work. Mr. A. V. Roe and Mr. Cody had shown that it is possible to succeed in England. Had these gentlemen been encouraged from the commencement, England, instead of being behind all civilised nations, would have been far ahead. For although it was possible by the aid of rhetoric to make us appear efficient, yet really we were far behind.

In the early days the struggle was a very hard one. He, personally, knew one constructor who was spending all his small income on experimental work and living on less than 12s. 6d. per week. [I believe Mr. Flanders referred to Mr. Roe.—Ed.]

He himself had sunk all his very small capital in experimental work on monoplanes and was rewarded by some success. He found no one wanted aeroplanes in this country and was thinking of going abroad, when Colonel Seely said that aeroplanes would be required by the Army.

He induced some friends to give him financial assistance to undertake the orders with which he was favoured. On inquiring if further orders were likely to be placed, he was told that they must wait and see how their machines behaved in use, but that the monoplanes would have to be altered to comply with the report of the committee on monoplanes.

The report, with which he was in entire agreement, was finished and dated on December 3rd, 1912, and although he repeatedly asked for a copy, no copies were issued till February 4th, two months after the report was dated. After a little correspondence to settle methods of construction he quoted for the required alterations in the Flanders machines on February 12th. Since then they had heard nothing, although that was six weeks ago. He believed these delays were intentional.

So far this year the only information that he had been able to obtain was that his firm would not be called on to tender for "B.E." machines, hence he had been compelled to discharge their trained mechanics, who, in disgust, had abandoned the aeroplane trade. These men were trained with difficulty and at considerable expense.

Colonel Seely had stated that he would have by May 31st 23 more aeroplanes than he required. The total number of aeroplanes, and those but slow machines, fit for immediate use on the previous Monday was but 38. These were 17 at Upavon, five at Montrose, two at Lark Hill, and 14 in R.F.C. sheds at Farnborough. There were also 30 machines in R.A.F. sheds which were not in immediate flying order.

The serious point of the statement by Colonel Seely was that there are 23 more machines than required. Did this mean that there would be no more orders placed this year?

The excuse would doubtless be the imagined inability to obtain aeroplanes, which was due to the sole reason that the aeroplanes were not ordered. No aeroplanes were ordered by the Army from British makers between September and January.

When at the Royal Aircraft Factory last summer, he was told by one of the employees that he had better not risk much money on military aeroplanes because the official intention in that department was to crush the private constructors. At the time he doubted the statement, but since had learnt that it was true.

It meant that a huge experimental department, assisted by a subsidy, had decided to get all English aviation into its own hands; to make a corner in aviation; to form itself into a State-owned trust; to crush the private firms by the gigantic force of the State funds to which these firms are compelled to

contribute. Yet we were assured only a year ago that the Royal Aircraft Factory was to provide data and to conduct experiments that makers could not afford to do themselves. How much of the data which is obtained is published in the Blue Book, or can be obtained, even under a pledge of confidence, by an independent constructor?

The method by which makers were being crushed was, firstly, by delays and by skilful evasion to strangle small constructors by their own standing charges. By withholding work as long as possible and then forcing a large order to be rushed through. Next by annoyance from hypercritical inspectors and illegible drawings. For instance, "3/4+ two thicknesses of 12 S.W.G., nearly," cannot be called an intelligent or accurate method of dimensioning drawings, sprinkled with the Greek alphabet to mystify the British workman.

As there would be no one able or willing to build their machines, we should see a huge factory where all the aeroplanes used in this country would be made, any loss on construction or salaries being charged to a huge experimental grant. The head of that huge State-owned trust would be a rich and happy man.

Not only was this opposed to the promises of a year ago, but it was cruel to those who are being crushed, because had this policy been stated at the commencement many would have left England for certain foreign countries, which were anxious to get constructors a year or so ago, or, perhaps, they would have cut their losses and abandoned the science.

Presumably the reason that this policy was not stated was so that the perpetrators of it, not being sure that their machines would make good, could fall back on the makers in case of failure, and that they might extract information from machines built at the makers' expense.

Lest people should think he spoke as one who had failed in his work, he might compare his monoplanes with the "B.E." of the same date:—Slowest speed,—monoplane, 41 m.p.h., "B.E.," 42. Fastest speed,—monoplane 67 m.p.h., "B.E." 72. Climbing,—monoplane 330 ft. per sec., "B.E.," 490. Factor of safety on monoplane considerably higher. The monoplane had to use the same propeller for all tests. The "B.E." used different propellers for different tests. The monoplane could be flown without exertion on the part of the pilot in winds higher by 10 or 15 miles per hour than the "B.E.2," even though the biplane pilot had to work hard.

At the last Paris Aero Exhibition more than three-quarters of the machines which were the property of the French Army were superior to any machines which our Army have in actual use at the present time. To compare our dirigibles with those of foreign countries is a joke.

In the face of these facts, was it surprising that managing directors of large engineering works and men of wealth received the proposal of aeroplane constructors with derision?

Mr. Cody's Views.

Mr. S. F. Cody was the next speaker. He touched on the subject of supplying the starving manufacturer with work, adding, "If anyone has cause to grumble, I have." He pointed out that his war kites (which are simply aeroplanes without engines) were fitted with warping wings and rudders before the Boer War. Afterwards he built a machine practically the same as his latest machine, and the War Office gave it away to him because they thought it was no use; at any rate, if that was not the reason he thought that their policy must have changed very much.

He wanted a 100 h.p. engine for it, and finally he got 8 h.p. more than that. He would like to compare the performances of his machine with the Royal Aircraft Factory biplane. Some time ago he challenged the pilot of the R.A.F. biplane to a race, and beat him by 300 yards in a mile and a half, though he had only had £3,000 with which to evolve his machines against the R.A.F. £150,000, and he had not even a floor to his shed, being compelled to work in the mud.

He disagreed with Mr. Flanders as to the superiority of French machines, and the result of the Military Aeroplane Competition proved he was right. He was willing to bet £1,000 on his own machine against any French machine which was built before the Military Competition.

He had only had one order from the War Office, and he would like some more. At present he had a 500 h.p. engine on order, which he was going to fit to a new type of aeroplane. If the Government would not buy it when it was built he would go round with the hat, and then present the machine to the Government. If the Government insisted on machines of the "B.E." type, it ought to be quite easy for the Avro and Bréguet firms to build them. If the Government wanted the best machine they ought to set up definite conditions and allow the makers to go for them. He thought that the "B.E." type was wrong, because it had the screw in front, and he thought that most practical soldiers would agree with him.

Captain Wood Makes Suggestions.

Captain H. F. Wood (Vickers, Ltd.), said that one should not look a gift horse in the mouth, so he did not propose to criticise the Government policy. He pointed out that £234,000 had been allotted to the Royal Aircraft Factory for experiments, and the buying of aeroplanes. He heard rumours of experiments in dirigibles, but he hoped that some of the money would still be available for the purchase of aeroplanes from manufacturers. He thought it would be better for constructors if they were set a series of tests for machines either with the engine in front or behind, and were guaranteed orders for a certain number of machines if successful. At present each maker was designing what he thought best.

Captain Wood also wanted to know whether the standard for a military aeroplane was the same now as in the Military Aeroplane Competition, and suggested that 4½ gallons fuel capacity was not needed in some types. It would also assist makers greatly if the Government would say how many machines they wanted, just as in the Naval Estimates it was stated how many ships were to be bought and laid down. He understood that the R.A.F. existed for experiments; could not the results of those experiments be published monthly in confidence to certain constructors on a selected list? As to the engine prize, the sooner the conditions were laid down the sooner the engines would be made. Referring to the speed with which aeroplanes could be built, he said that they could not be turned out in a few weeks owing to the difficulty of obtaining the exact grade of materials required.

Mr. Joynson-Hicks on Spasmodic Orders.

Mr. W. Joynson-Hicks, M.P., said that the first thing the Government had to consider was what was best for the nation, and the manufacturers had to come second, but he questioned whether the Government could do the best for the nation without British manufacturers. In time of war they could not get foreign machines, so the home industry must be supported. Were the Government taking the best course? Even in France the demand was entirely from various Governments. Manufacturers must have a steady supply of orders, for spasmodic orders tended to bad work.

He would like designers to consider certain vital variations in the hydro-aeroplanes. The Government must have a number of huge hydro-aeroplanes which might run up to as much as 1,000 h.p., and they would probably need small monoplanes as small as torpedoes, though he made this suggestion with diffidence in the presence of Mr. Mervyn O'Gorman, the head of the Army Experimental Department.

Mr. A. E. Berriman thought that one was apt to kick the wrong football in this country, one always kicked the Army, and he suggested that it might be better to look into the state of the Navy. At the same time, he was of the opinion that Colonel Seely might bring the Military Wing, R.F.C., up to strength quicker, and that it could be done this year. He quoted the figures issued by the Navy League recently, and said that people did not realise the cost of equipment, and he pointed out that it was not much use agitating for expansion till the present establishment was up to strength. One could not tell what strength the Navy had, for we did not even know how many submarines it possessed, and he doubted whether anyone knew, outside of Germany.

He hoped Mr. Winston-Churchill would provide, at any rate, his half of the necessary million for aviation, even though Colonel Seely had not provided his half. Colonel Seely had multiplied the personnel of the establishment by five, but had not multiplied anything else by one, and had made an in-

sufficient attempt to "absorb the energies of the industry," as he had expressed the intention of doing. Though he entirely disbelieved in the possibility of a separate third Service, he thought that some authority was necessary to see that our aerial defence was sufficient. He regarded all army aviation as being for overseas work, and thought that it was a mistake to regard foreign army work as not affecting us.

Gentle Sarcasm.

Mr. G. F. Mort said that his interest was purely academic, as the English engine maker was a mere looker-on. As to the proposed engine tests, he hoped that sufficient time would be given to produce a satisfactory engine.

Dr. Walmsley, chief of the Northampton Institute, pointed out that we had not got the Government proposal before us. He emphasised the importance of having highly trained mechanics for aviation. In this respect the Government were only doing lip service. They offered first-class mechanics 4s. a day, and so could not compete in the open market. At the present day there was a boom in engineering, so that good mechanics were scarce, and also the rank and file of mechanics do not believe in the future of aeronautics. They had special classes for aeronautics at the Northampton Institute, but the attendance was insufficient for them to be continued. One reason for this was the limited market for skilled labour, and when one heard Mr. Flanders speak of the dismissal of trained men he did not wonder at the workers' lack of interest. He pointed out that one might squander money and get it back, but one could not squander time and get that back, and he instanced our insignificant fleet of an alleged 101 machines to-day as time wasted.

General Henderson on Government Policies.

Brigadier-General D. Henderson, C.B., D.S.O., Director of Military Training, on whom fell the thankless task of acting as *advocatus diaboli*, explained that while the personnel of the R.F.C. had been multiplied, everything had increased, except land.

Mr. Joynson-Hicks had drawn attention to the advantage of constructors getting steady orders instead of spasmodic orders. General Henderson continued in these words:—"Last year, as everybody knows, there was an insufficient provision made at the beginning of the year for the needs of the Flying Corps, and if you only get spasmodic money you must give spasmodic orders; if you have no steady money you cannot give steady orders. The money we have been able to get has been largely borrowed and saved from other things, and certainly for a considerable interval we were unable to give orders, because we had not got any money.

"Capt. Wood mentioned the allotment of the Factory. The allotment of the Factory includes nearly everything we buy, including aeroplanes and the stores for the Royal Flying Corps. It is not published what the allotment is inside that, but it is clearly laid down, and there is no chance of anybody stealing anybody else's money."

As to the suggestion that if they could arrange certain tests and announce that they were buying machines that met those tests, General Henderson agreed that it would be desirable, but he did not know how to draw up a satisfactory test. After you have bought an aeroplane, a man has to fly it, and you may make as stringent a test as you like, and the constructor will make a machine to pass those tests, but he may not make a machine that a man wants to fly, and he did not think that any large purchases could properly be made of aeroplanes that officers were disinclined to fly. There would be difficulties enough when they got designs of aeroplanes fitted for warfare. It would probably be difficult to fly some of them, but while they were working with purely flying machines it would be most disadvantageous to the Service generally not to consider the wishes of the officers who have to fly. They had tried to distribute orders so as to be thoroughly acquainted with the machines they might buy, and until the officers had flown them they were not inclined to purchase more. The test and a promise of purchase seemed the proper way of buying engines, which are on a different footing.

Concerning Journalistic "Trash."

Referring to Mr. Flanders' speech, General Henderson said:—"It seems that there are two policies to be discussed, one is the policy of the Government, and the other is the policy of a few people who have been consistently declaring that it is the policy of the Government. I can find no point of agreement between them, and very little similarity. The policy of the Government as far as the Army is concerned has been declared publicly. A white paper was published which set it forth, and as far as I know it has not been departed from in any material detail. Certainly no mention was made of any time limit in which this programme was to be carried out, and that means a natural point for criticism, although I think it is more suited to political discussion than to expert aeronautical discussion.

"The other policy—the imaginative one—was apparently set out as a sort of cockshy, so that anybody who wanted to throw mud should not lack a target. I have been told that its object was to create such dissatisfaction in the country with the present condition of military aeronautics that the Government would be forced to spend a large sum of public money, some of which would naturally go to the aeroplane trade.

"I have waded through columns of trash in the columns of certain aeronautical papers, and perhaps still more in the aeronautical columns of other papers, and I have tried to find out any more straightforward reason than that for this rather persistent campaign, and I have not found any. I have found some other things though. There was a fairy tale which was mentioned to-night about the fixed intention of the Government to destroy the aeroplane trade, and have all the machines built at the Factory. It has been repeated in as many variants as any of the old favourites, but the origin of the myth is a mystery. I cannot quite understand what purpose, good or bad, the originator proposed to serve, unless it was to utilise it for a certain amount of malicious comment, mostly of a rather personal kind. I happen to know it has had one effect which was not in the mind of the originator. I know it has acted as a deterrent to certain business men who might otherwise have been inclined to invest a little money in the aeroplane business. You can hardly expect a business man to embark on an enterprise which he is persistently informed is doomed to extinction; I do not think it would be reasonable.

"Then there are stories about which I need not go into detail which might almost have a cumulative effect. They all tend to the idea that the affairs of the Military Wing of the Flying Corps are mismanaged in the most imbecile way, and I think that people need not be astonished if those in authority should hesitate very much to apply more than the necessary minimum funds to the maintenance of a concern which is so inefficient. I am afraid that none of these stories that have been going about have had any very great effect in improving the condition of the aeroplane industry; in fact, if I were an aeroplane constructor I should feel inclined to kneel down to-night by my little bed and pray to be delivered from my friends."

In Conclusion.

General Ruck, in closing the debate, said that it was a pity to go for the Government. He had had much experience of Government factories, and he thought that the killing of an industry was quite opposed to the policy of the Government. General Henderson had defended the Government in the nicest possible way, and he personally thought it was a remarkable feat to produce so efficient a Corps so quickly.

Mr. Joynson-Hicks gracefully proposed a vote of thanks to the Chairman, and the meeting concluded.

At the annual general meeting previously, the following were elected to fill the vacancies on the Council: A. E. Berriman, Griffith Brewer, J. W. Dunne, Mervyn O'Gorman, Alec Ogilvie, F. Handley Page, W. O. Manning, Col. H. E. Rawson, C.B., R.E.

Brigadier-General C. Penrose, C.B., has been elected an Associate Member of the Society.

The tenth meeting of the present session will be held at the Royal United Service Institution, Whitehall, on Wednesday, April 9th, at 8.30 p.m., when Mr. Archibald R. Low, M.A., A.F.Ae.S., will read a paper on "Propellers." Sir John Thornycroft, F.R.S., will preside.—Bertram G. Cooper (Sec.).

Naval Aviation.

The First Lord of the Admiralty, Mr. Winston Spencer-Churchill, in introducing the Naval Estimates in the House of Commons on March 26th, made the following reference to the Admiralty aeronautical programme :—

I pass from oil to air—that other great new topic to which my statement ought to refer. My right hon. friend (Colonel Seely) entered very fully last week into the progress and present position of Army aviation. The aeroplane service plays a much smaller part in the naval organisation than it does in military affairs, and, of course, in the Navy as well as in the Army it is in its infancy. This time last year the Navy had five machines and four trained pilots. To-day it has forty machines and sixty pilots. The anomaly of our having more pilots than machines is due to the unexpected non-delivery of machines which were ordered in good time, but, owing to one difficulty and another, have been delayed. Twenty more machines are expected to be received in the next few weeks. By the manœuvres in July we shall have seventy-five naval machines and seventy-five pilots. By the end of the new financial year, for which we are now providing, we shall have a hundred pilots and considerably over a hundred machines in the Naval Wing.

We have no reason to complain of the skill of the naval aviators. We have carefully studied the report of the Committee, but the naval flying wing still use monoplanes. There are nine monoplanes in use. We consider it necessary to use them for the purpose of reconnaissance, training, and scouting, and also in connection with the attack of submarines, an interesting by-product of this new form of warfare. It is also not so dangerous to alight on the water from a monoplane as to land on the unyielding surface of the earth, and no serious accidents have occurred with any naval machine to any naval aviator.

We believe that the various types of hydro-aeroplanes which we have evolved and which are being delivered, some of which carry guns and which are fitted with wireless with a range of sixty miles, and which can rise and descend in comparatively rough waters, are, to put it very modestly, certainly as good as anything which exists abroad ; and as the result of prolonged exercises during the past year at the various naval stations between hydro-aeroplanes and submarines, and in conjunction with the patrol flotilla, we have come to the conclusion that it is necessary that there should be a chain of hydro-aeroplane stations at various points on the British coast-line for naval scouting purposes and for working with the patrol flotilla. Stations are being rapidly established and a number will be completed in the course of the present year. The problem of carrying aeroplanes in ships is also receiving attention, and a cruiser has been detached for this service. Altogether, compared with other navies, the British aeroplane Service has started very well. The preliminary difficulties have been surmounted, and we shall be able now to move steadily forward in several promising directions.

I have a less satisfactory account to give of airships. Naval airship developments were retarded by various causes. The mishap which destroyed the "Mayfly," or the "Won't Fly," as it would be more accurate to call it, at Barrow, was a very serious set-back to the development of Admiralty policy in airships. It happened to coincide with a moment of depression in Germany. It is only within the last twelve months that our enterprising neighbours have begun to reap the fruit of so many years of experiment and expense, and up to a very late period it was doubtful whether any valuable military results would be achieved. It is evident that the time has arrived when we must develop long-range airships of the largest type. That cannot be achieved by an impatient gesture nor by scattering money wildly, and the following measures are all which we consider it useful to propose at the present time. First, a naval airship section has been established, and five officers and fifty men have, by the courtesy of the War Office, been trained at Farnborough with the military airships. Secondly, two medium-sized non-rigid airships have been purchased for training and experimental purposes. One of these, the "Astra Torres," is almost completed, and will shortly be undergoing trials. Another, the "Parseval," has its envelope completed, and the car is nearing completion.

Provision is made in the Estimates for a double airship shed in the Medway Valley ; two others are already available for use, and steps are being taken to establish other large sheds in suitable districts. As the development of the naval personnel and accommodation for airships proceeds—these are antecedent conditions—we shall order other airships. We also propose to enlist the services of some great British manufacturing firm in the construction of rigid airships, and negotiations are on foot which will lead to that result.

The money taken in the new financial year for the naval air service is about £321,000, which added to that taken by the Army for their aeroplane service, makes a total for the year of about £850,000. I do not think it would be practicable to spend a larger sum of money without wasting it at the present time. No reproaches are deserved by the Admiralty for any time that has been lost in the development of dirigible airships. I do not suppose that there is any Admiralty in the world which runs more risks and spends more money on new ideas and new experiments than we do. Before these vessels emerge from the experimental stage, before they become within the restricted limits of their military action really potent factors, we shall be provided both with the means of using the advantages which they offer and of combating the dangers which they threaten.

My right hon. friend the Secretary of State for War, who, like all his predecessors, comes in for a great deal of criticism when the Army Estimates come round, has, however, made arrangements which will shortly be completed to distribute thirty of forty guns with improvised mountings capable of vertical fire at places of military significance, and a better and more powerful gun is being manufactured in sufficient numbers for the Army and Navy as quickly as possible, and these will be ready towards the end of autumn. The results of the trials of these improved guns have greatly encouraged those who disbelieved in airships as effective machines in war, apart from scouting. A number of vertical searchlights of a satisfactory pattern for night firing are nearly completed. In these circumstances I trust that the public, without losing interest or failing to give us support, will await future developments with composure and sobriety.

[Apart from the sound common-sense of Mr. Spencer-Churchill's statement, it is very remarkable for the modest exposition of what has been done by the Naval Air Corps. Only those of us who know the real position can form a full comparison between this restraint and the empty bombast of the Secretary of State for War a week earlier.—C. G. G.]

QUESTIONS IN THE HOUSE.

Oral Answers, March 26th, 1913.

Aircraft.

29. Mr. Alan Sykes asked the Secretary of State for War whether, in view of the number of aeroplanes now available for military purposes, he will arrange to send some of them round the Territorial camps this summer so as to give a practical demonstration to the Territorials of the capabilities of this new branch of the Army.

Colonel Seely : This suggestion shall receive full consideration.

31. Mr. Joynson-Hicks asked the Secretary of State for War whether the decision not to adopt large airships of the Zeppelin or other similar type was made by the Committee of Imperial Defence, the Cabinet, or the War Office ; and whether, in either case, there were reports from his military advisers?

Colonel Seely : The answer to this question, so far as it refers to War Office action, is in the affirmative.

Royal Flying Corps.

32. Mr. Joynson-Hicks asked how many of the 123 officers appointed to the Royal Flying Corps have ever flown a test equal in severity to that necessary to secure the French military brevet, which calls for a flight over a triangular course of at least 150 kilometres in extent, and which is held by over 200 French military pilots?

Colonel Seely: Forty-seven officers have passed the course laid down by the Central Flying School, which, as I have previously stated, is a very exacting test. About thirty more officers will have passed the same test in the course of next month.

33. Mr. Joynson-Hicks asked what was the number of aeroplanes actually in the hands of the squadron commanders, flight commanders, and pilots officially gazetted as flying officers of Squadrons Nos. 2, 3, and 4, Military Wing, Royal Flying Corps, respectively, on 19th March, 1913; how many of these aeroplanes were on that day in a fit condition to have started at one hour's notice on a flight exceeding an hour's duration; and how many in such condition were then capable of exceeding a speed of sixty miles an hour in still air?

Colonel Seely: I must refer the hon. gentleman to my reply to a similar question put by him on the 13th instant, to which I have nothing to add.

[It will be noted that the Secretary of State has evaded all Mr. Joynson-Hicks' questions.]

Written Answers.

Aerial Espionage.

Mr. Perkins asked the Secretary of State for War whether he proposes to establish observation stations in the vicinity of magazines and arsenals for the better detection of aerial espionage; and whether, when provision is made for the better protection of magazines by the provision of sky-gun batteries, he proposes to utilise the services of the local Territorial Garrison Artillery to man them?

Colonel Seely: The points referred to by the hon. gentleman have already received full consideration.

The Schaef Monoplane.

The "Wellington Evening Post" (New Zealand) of January 4th, 1913, says:—

"A very successful first trial of Mr. A. W. Schaef's new monoplane took place early this morning in the presence of a number of spectators. The machine was wheeled out on to the beach at the further end of the bay about 6.30 and short runs were taken in order to let the pilot, Mr. Schaef himself, get accustomed to the controls, as it is the first time he has sat in an aeroplane since the brief flight accomplished in his old monoplane nearly two years ago.

"The Anzani Y engine worked perfectly. A variable breeze from the north coming over the sand hills and in puffs through the gullies made steering difficult, and several times the plane ran into the surf.

"The behaviour of the aeroplane was generally so satisfactory that Mr. Schaef decided to try the new propeller—a 'Rapid'—and open the engine out a little more to essay a lift. This was after considerable rolling practice down the beach in the direction of Maranui. The change of the propeller had the desired effect. The speed of revolutions went up, and it took four persons to hold the aeroplane on the wet sand. When the word came to let go the monoplane shot away and, running at about 25 miles an hour, along the beach, so showed the possibilities of the machine. For about half a dozen trips Mr. Schaef kept her down by his elevators and throttled the engine to about three-quarter speed. The side wind proved very troublesome, tilting up the windward wing and swinging the planes seaward.

"Shortly before 8 o'clock, after adjustments had been made, the pilot opened the engine and let the plane out. She did three short flights of some 20 or 30 yards, which might have been extended much farther but for the tendency of the wind to heel the machine out to sea. As soon as this showed itself the pilot, in order to save damage to the machine, shut off the power and the plane settled in the shallow water."

Mr. Schaef has been appointed agent in New Zealand for the General Aviation Contractors, Ltd., by whom the engine and propeller referred to have been supplied.

Easter Flying at Leeds.

During Easter week Mr. Harold Blackburn gave exhibition flights at Leeds. On Good Friday and Saturday he made two or three ascents on Mr. Foggin's new 50 h.p. Gnome-Blackburn machine, rising on one occasion to a big altitude. This machine climbs exceedingly quickly, and shows a speed of about 60 miles per hour.

On Easter Monday Mr. Blackburn made his first flight about noon, flying round Wakefield and the surrounding country. During the whole afternoon flying was in progress, Mr. Blackburn making no less than seven ascents on his own and Mr. Foggin's machine.

The final flight was made by Mr. Foggin, who mounted his new machine for the first time, and made a splendid flight of nearly 20 minutes' duration. He rose to a good altitude and handled the machine in such excellent style that one could hardly believe this was his first flight on this type of machine.

On Tuesday afternoon Mr. Blackburn again made a long flight before an interested crowd, using Mr. Foggin's machine. He made some very pretty banked turns with his usual skill, finishing off with a neat glide.

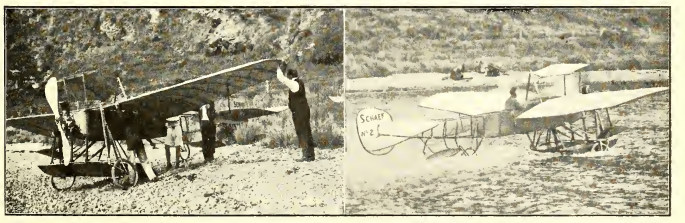
The flights were witnessed by thousands of spectators, who were very enthusiastic in showing their delight and their appreciation of the flights of Mr. Blackburn and Mr. Foggin.

An Airship School for England.

It is now possible to qualify for the airship pilot's certificate at a reasonable fee in this country. The Willows Aircraft Co., Ltd., are now prepared to give a course of the necessary instruction, which consists of seven ordinary balloon ascents and six trips in an airship, for an inclusive fee of £100, with special terms to officers of the Navy and Army and the first dozen pupils joining. Six pupils are now taking the preliminary course of ballooning, and in about four weeks' time the airship flights will commence in the vicinity of London, with a three-passenger machine of 35,000 cubic feet capacity, driven by a 60-h.p. motor.

The first balloon ascent took place last Tuesday from Battersea, three pupils—Mr. H. Barber, Capt. G. Bernal, and Mr. R. W. Crocker—accompanied by Mr. E. T. Willows (the only private individual in the country at present holding the airship pilot's certificate) as instructor.

An enjoyable trip of about four hours ended with an easy landing six miles beyond Henley, one hour being spent above the clouds at 9,000 ft.



Mr. Schaef's Hydro-monoplane, built in New Zealand.

The Hervieu Portable Hangar.

On Monday, March 18th, Mr. Hervieu, assisted by a handful of R.F.C. men, gave a successful demonstration of his patent hangar's various virtues at Farnborough, before a distinguished company of interested personages, including Major Sykes (Commandant, Military Wing, R.F.C.), Major Brooke-Popham (O.C., Lark Hill), Lieut. Shepherd R.N. (representing the Admiralty), Mr. Mervyn O'Gorman, and Major Maitland, as well as the chief of the Ordnance Department (Aldershot), the P.M.O. (Aldershot), and others.

It is difficult to credit that a strong and stable tent, forty feet wide, big enough to house a Blériot, can come out of two boxes 10 ft. by 1 ft. by 1 ft., a few extra steel tube stanchions and a small bundle. The whole thing weighs only 1,200 lbs., forming an easy motor load. So much for the tent's portability.

When the lorry arrives at the camping ground, these two boxes are unshipped and laid parallel, forty feet apart, the lorry moves on forty or fifty feet and the canvas bundle is unshipped at the point to which the tail will extend—the tent being triangular in plan. The boxes are now opened and the structural members of the roof removed therefrom in order, and laid in position on the ground between the two boxes. These members consist of steel tubes, very light but of ample strength; from them is built up a simple but ingenious truss, in which there is a commendable absence of bolts, nuts, and other losable parts. The pieces are so laid upon the ground that when the truss is complete it stands in place between the boxes, ready to be hoisted to its final position on the four main standards.

At this point, while one group of men is unfolding the canvas upon the ground, another group is occupied in filling the boxes with stones, sand, earth, or any other heavy material that happens to be handy. The canvas is unfolded forward, its front part drawn over the roof truss and fastened in place; the front curtains are also attached. The four main standards are then set up in four sockets formed for that purpose in the ends of the boxes, and braced with steel cable. Tackles are arranged upon the four mast-heads, and the truss, with its canvas covering, is hoisted to the top and secured there.

From the hindmost part of the truss, the roof slopes downward, and the sides slope rearward to a curtained opening three or four feet square, and this triangular tail of the tent is drawn taut either to a couple of pegs driven into the earth or else to the lorry itself; the side walls of the rear portion are held down by sand-bags, earth, or rock shovelled into a canvas trough formed for the purpose at the bottom edge of the walls.

The tent is now complete. Diagonal tubes may be added to strengthen the structure against abnormal side winds, and minor standards may be placed half way down the tail if desired. A feature which strikes one very forcibly is the elimination of pegs and ropes, by virtue of which the tent may be set up as conveniently upon a platform of rock as upon soft ground.

The R.F.C. men, who had had but short experience in handling the tent, set it up in 27 minutes and packed it up again in nine minutes. It was quite obvious that with more practice these times could be very nearly halved. The tent has stood for four days exposed mouth first to the severe winds of the recent storms without any sign of failure.

Altogether, this demonstration created a most favourable impression upon the spectators. The example shown, as already mentioned, has a width of 40 ft., but tents of the same pattern are made half as wide again.

A Practical Man on Dirigibles.

Men who really know anything about dirigibles are few and far between. Therefore the following remarks by M. Capazza, one of the most experienced dirigible pilots in the world, are worthy of particular notice. The Aeroplane is greatly indebted to Mr. C. Phillips Vierke, of Paris, for transmitting them, as follows:—

"I have had a talk with the dirigible pilot, M. Capazza, who has probably had more experience in managing airships than any man alive.

"He says that France has not made an atom of progress with regard to the construction of dirigibles for the past two years, whilst Germany has been forging steadily ahead all the time. This indifference is, of course, due to the heads of things aeronautic being so enamoured of aeroplanes that dirigibles in their estimation count for absolutely nothing. In the meantime M. Capazza finds himself with nothing to pilot, whilst sitting shivering in the imminent shadow of the Zeppelins, which he considers veritable monsters of efficiency. Although M. Capazza has always piloted dirigibles of the non-rigid and semi-rigid classes, he is absolutely in favour of the Zeppelin theory, and declared to me that unless France sets to work to build them on a really sensible scale she will soon be outpaced by Germany, who is at the same time organising an aeroplane Fleet which will in time be equal to that of France.

"Asked to express an opinion on the 'Scareship' matter, M. Capazza said that it would be perfectly easy for a Zeppelin to cross the North Sea to England in broad daylight and make the return journey undetected. He himself, he declared, had many times been above the sea in an airship at a comparatively low altitude, and yet their craft had been unnoticed by ships below, whom they distinguished perfectly. The mariner, he said, naturally gazes towards the horizon, and never thinks to raise his eyes aloft except in bad weather, when, of course, all an airship wishing to remain unperceived has to do is to remain above the clouds.

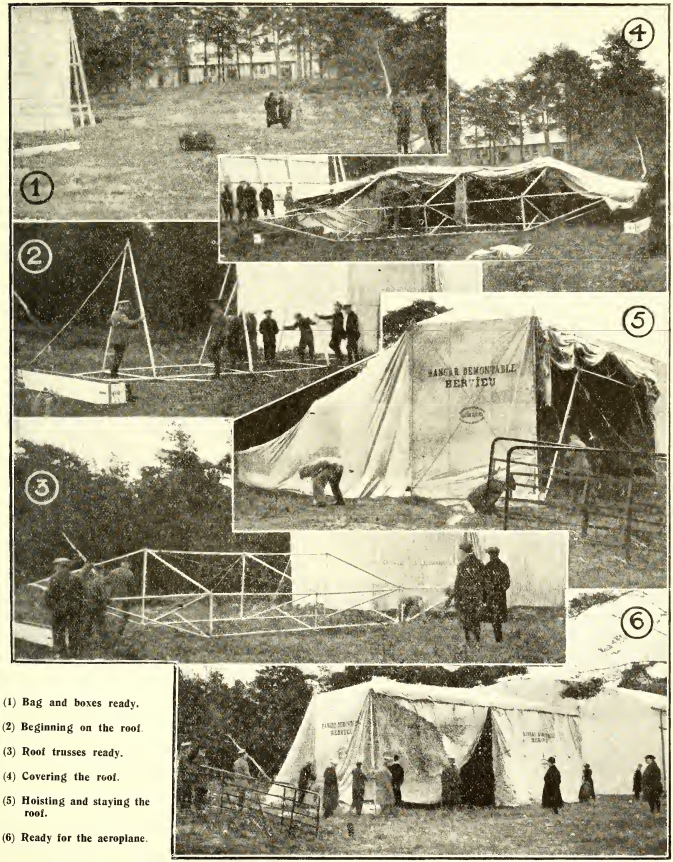
"One very interesting thing M. Capazza told me about was the decision of the French Government to institute a system of official inquiry into air accidents similar to that of the Royal Aero Club, which, he said, was an excellent model. He has been asked, as a matter of fact, by the Government to investigate as far as possible every air accident which has so far occurred in France—a somewhat tall order. And M. Capazza produced from his pocket a huge dossier of newspaper clippings, constructors' reports, etc., relating to some four or five hundred air fatalities, showing that he was hard at it. So, you see, there actually is something relating to matters aerial in which England can show a foreign Power the way.

"Another interesting article which my informant took from his pocket, by the way, was a copy of the latest number of The Aeroplane, to which, he said, he owed much valuable information, and which, I notice, is cropping up at all the paper kiosks on the boulevards, exhibiting itself as flagrantly as any other London weekly."

The Aero-Submarine.

The Borel hydro-monoplane from the Aero Show, which passed its Admiralty trials with flying colours recently, came to a sad and sudden end on March 18th, owing to one of those unavoidable mistakes to which the best of pilots are liable at times. Commander Samson, R.N., who had on several previous days flown the machine with much success for periods exceeding an hour on each occasion, had been flying over the Swale for about an hour with Lieut. Seddon, R.N., as passenger. The water was flat calm, and, as is generally known, it is almost impossible to judge one's height over still water, because one sees right down into it. In alighting the pilot came down to what seemed like about 30 feet above the surface, and the machine immediately hit the water at too steep an angle for the floats to pick her up. The whole outfit dived clean into the water and then turned over, both pilot and passenger fortunately getting clear of wires and so forth, and being able to hang on to the wreck till picked up. It is said that a considerable amount of damage has been done and that the machine will practically have to be rebuilt, for unfortunately no maker has yet evolved an aeroplane which will act satisfactorily as a submarine.

Building a Hangar in Twenty-seven minutes.



(1) Bag and boxes ready.

(2) Beginning on the roof.

(3) Roof trusses ready.

(4) Covering the roof.

(5) Hoisting and staying the roof.

(6) Ready for the aeroplane.

Above are shown the six stages of building the new Hervieu Hangar. The operation was completed at Farnborough by seven unpractised hands in 27 minutes.

Exhibitions at Hendon.

Although fog prevailed in other districts, the sun was shining brilliantly at Hendon on Thursday and the wind was negligible. M. Nöel took away another Grahame-White biplane (70-h.p. Gnome) to Farnborough after a few circuits over the aerodrome. Lieutenant Spenser Grey went up several times in the 80-h.p. Admiralty Caudron, and later in the 70-h.p. machine which he intended to fly to Eastchurch, but he was deterred by the river-fog and did not start.

Lieutenant Porte, R.N., took up a new 80-h.p. Deperdussin, as remarkable as the last for the quietness and flexibility of its Anzani engine. Mr. Cheeseman made a short flight in the old Grahame-White school biplane, and Mr. Lee Temple was also out in his 35-h.p. Caudron, but was forced by engine trouble to land in a neighbouring field, fortunately without mishap.

On Saturday, although the weather prevented any racing, the flying at Hendon was very fine. The first out was Mr. Hamel, piloting Miss Trehawke-Davies on her tandem Blériot. They made a couple of circuits low down and got a horrible shaking. Mr. Hamel said afterwards that the gusts were exceptionally fierce, and he could see the wings bending, which he always takes as a sign that it is time to come down. Shortly afterwards, M. Verrier, with a passenger, made an exciting flight for two circuits on a Maurice Farman, when he also had had enough.

After that, interest centred in the assembling of a new Henry Farman biplane in one of the Aircraft Co.'s sheds. The machine arrived in its packing-case exactly at 2.45 p.m. At 5.45 M. Chevillard was casually standing the machine on its head a couple of hundred feet in the air just to see whether it had been properly assembled. Afterwards, he made several flights, on one of them taking Miss Trehawke-Davies as passenger. He did one of his worst spiral dives with her, and the plucky little lady seemed hugely delighted. Mr. Hamel also went up on his 50-h.p. single-seater and did some very nice flying.

On Sunday, although there was a strong wind, it was steady, and died away to nothing at dusk, so there was plenty of flying all day. M. Richet was up on the Bréguet in the morning, but he did not turn out in the afternoon. Again the first out was Mr. Hamel, who took Miss Davies off to Brooklands, did a couple of flights there, and came back to Hendon. While he was away MM. Verrier and Chevillard both took up sundry passengers and afterwards flew over to Farnborough to deliver their machines to the Royal Aircraft Factory.

Mr. Turner, on the 60-h.p. Caudron, was flying very well, and Mr. Temple, on the little 35-h.p Caudron, made quite a long flight towards evening at about 300 ft.

Lieut. Porte, R.N., on the 100-h.p. Deperdussin, went out over the surrounding country for quite a long while, and one of the 35-h.p. Deperdussins revealed quite suddenly a new pilot of great promise.

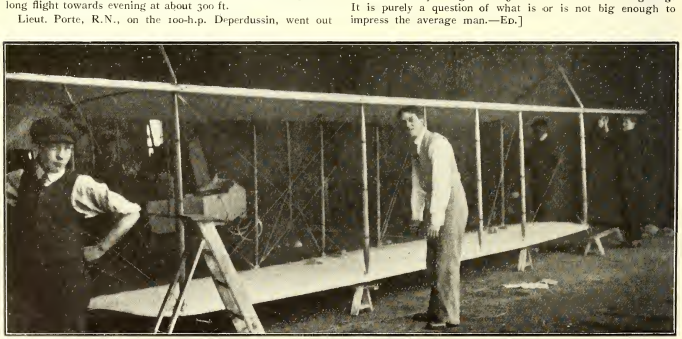
This was Mr. Whitehouse, who took the little machine to well over 300 ft. and flew for about half an hour in a style that one has not seen on so small a monoplane during any week-end at Hendon since Mr. Sabelli went off to the war. Mr. Whitehouse's final descent was very steep, and excellently judged, so he should decidedly make a name for himself, given suitable opportunity. While the other machines were out, Mr. Hamel took up in turn Miss Davies, Capt. Mark Kerr, R.N., Capt. Tyrer (Legion of Frontiersmen), and Mr. Loftus Bryan (South Irish Horse), and flew in truly marvellous fashion, doing banked dives and switch-backs such as the writer had never previously seen on a two-seater monoplane. The fortunate people that stayed to the end really had a better entertainment than those who went off earlier satisfied with having seen so many machines.

Concerning the Dunne Tests.

Mr. N. S. Percival, the well-known, pilot, writes from Versailles :—"In your comment on the certificate given by the Royal Aero Club for an uncontrolled flight by a Dunne aeroplane of 65 seconds in a 20-miles an hour wind, you say such a period is inconclusive and has been exceeded by other machines. I should have thought that the ability of the machine to fly for over a minute in such conditions is conclusive of its ability to continue to do so indefinitely, but even if it is not, surely the ability to do so much is valuable, and I know of no other aeroplane that has been seen in England on which such a flight has been or could be attempted.

"A flight such as you suggest, using only rudder control, would clearly have less value than a totally uncontrolled flight, as so much stabilising can be done with a rudder. Indeed, this uncontrolled state is practically the condition in which the Dunne makes all its flights, as it has no stabilising control, apart from the flaps which are used both for steering and elevating, and I believe there are machines flying on the Continent with no stabilising control except a rudder."

[The comment was not intended as any disparagement of the Dunne's performance. On the contrary, the writer is a firm believer in the ultimate arrival of inherent stability. Only, a minute is such a short time—except perhaps when one is a passenger in an uncontrolled aeroplane. When Farman flew a hundred yards it proved that an aeroplane could fly indefinitely, but it was not such a conclusive proof as was Fourny's flight of 13 hours odd without alighting. It is purely a question of what is or is not big enough to impress the average man.—Ed.]



M. Chevillard does "a job of work." The Henry Farman half an hour after its arrival.

The Week's Work.

MONDAY, March 24th.

R.F.C., Central Flying School.—Strong easterly wind. Dull, misty; some rain. On Maurice Farman 418, Lieut. Oliver 12 mins., to Lark Hill; Major Gerrard with Lieut. Oliver, 20 mins., from Lark Hill.

Hendon.—At W. H. Ewen School, M. Zubiaga straights on 28-h.p. Caudron with M. Baumann. Lieut. Usborne, R.N., circuits on 35-h.p. Caudron. Mr. Turner testing.

At Deperdussin School, Lieut. Porte for cross-country to Elstree and back on 100-h.p. Started from scratch, but could not make up handicap in short distance. Later for exhibition flight.

At Bleriot School, Mr. R. B. Slack on No. 5 (50-h.p. Gnome) in cross-country race. Engine not up to pitch.

Windermere Lakes Flying Co.—Mr. Adams out on "Water Hen" with and without passengers. Many spectators.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight on biplane to Chertsey Bridge and back. Mr. Knight straights on No. 3, Mr. Barnwell circuits on No. 3, then Mr. Knight (pilot) straights with passenger. Mr. Barnwell propeller testing on No. 5. In afternoon Messrs. Barnwell and Knight in race.

At Bristol School, Mr. Merriam early trial, then with Lieuts. Picton-Warlow, Peirse, Duncan, Gordon, McClellan and Morgan. Lieuts. Robertson Dobie, Blatherwick, Picton Warlow alone. Mr. Merriam, with Lieut. Blatherwick as passenger, round Chertsey. In afternoon Mr. Merriam with Lieuts. Gordon and McClellan. Later Mr. Merriam for race, but unfortunately went out of course, so went up to 2,000 ft. and did spiral glide. Lieut. Robertson Dobie for certificate in great style.

Salisbury Plain (Bristol School).—Mr. Pixton for test, and with Lieut. Griffiths and Mr. Tod. Later Mr. Picton on biplane and twice on "Sociable" mono. Lieut. Griffiths on biplane 20 mins. Lieut. Read twice 15 mins.

TUESDAY, March 25th.

R.F.C., Central Flying School.—Misty; strong easterly wind. Dull. On Avro 430, Major Fulton 8 mins. On Maurice Farman 411, Lieut. Longmore 10 mins. alone, with Air Mechanic Savill 28 mins, with Sergt. Robbins 22 mins., with Air Mechanic Turner 20 mins; Air Mechanic Collis 15 mins.; Sergt. Street 10 mins.; Sergt. Kemper 15 mins. On Maurice Farman 415, Asst. Paymaster Lidderdale 27 mins.; Major Trenchard, with Asst. Paymaster Lidderdale, 8 mins.; Master Mechanic T. O'Connor 14 mins.; Engr.-Lieut. Randall 18 mins.; Air Mechanic Higginbottom 10 mins. On Maurice Farman 427, Lieut. Vernon 12 and 25 mins.; Lieut. Bigsworth 20 and 24 mins.; Lieut. Glanville 15 mins.; Lieut. Holt 21 mins.; Lieut. Arthur 25 mins. On Maurice Farman 431, Lieut. Soames 12 mins.; Lieut. Arthur 20 mins.; Capt. MacDonell 14 and 25 mins.; Lieut. Glanville 9 mins.; Lieut. Holt 24 mins.

On Maurice Farman 418, Major Gerrard 10 and 15 mins.; Lieut. Oliver 8 and 12 mins.; Lieut. Bowhill 20 mins.; Lieut. Warter 15 mins.; Lieut. Rathborne 20 mins.; Lieut. Littleton 15 mins.; Lieut. Marks 45 mins.; Capt. Tucker 20 mins.

On Maurice Farman 426, Lieut. Unwin 27 and 30 mins.; Lieut. Harvey 12 and 21 mins.; Capt. Salmond with Sergt. Mead 12 mins.

On Maurice Farman 428, Lieut. Harvey 7 mins.; Lieut. Kennedy 16, 20 and 29 mins.; Lieut. Boyle 12 and 16 mins.; Lieut. Unwin 50 mins.

On B.E. 417, Capt. Salmond 6 mins.; Lieut. Dawes 17 mins.; Capt. Salmond with Petty Officer Grady 12 mins.

On Short 401, Major Gerrard 10 mins. On Short 402, Major Gerrard 10 mins. alone, with Capt. Vivian, R.N., 75 mins.; Lieut. Read, 20 mins.; Capt Macdonell 20 mins.; Capt. Vivian, R.N., 17 mins.

Hendon.—At W. H. Ewen School, M. Baumann on 35-h.p. Caudron. Lieut. Usborne, R.N., circuits. M. Zubiaga straights on 28-h.p. Caudron. Mr. Pendlebury rolling.

At Bleriot School, Messrs. Loftus Bryan and R. Desoutter straights on No. 1.

At Grahame-White School, Mr. Noel and Mr. Manton testing. Various pupils got in good practice. Mr. W. Birchenough doing fine circuits on No. 7 'bus, and Mr. North (new pupil) rolling.

Brooklands.—At Vickers School, in afternoon Mr. Barnwell testing biplane. Too windy for pupils.

At Bristol School, Mr. Merriam with Lieut. Peirse, but air too bad for pupils.

Windermere.—Lakes Flying Co. "Water Hen" several circles with passenger.

Dover.—Mr. Hamel up in afternoon with passenger on new 80-h.p. Blériot, just delivered.

WEDNESDAY, March 26th.

R.F.C., Central Flying School.—Clear; very strong Easterly wind all forenoon dropping to almost dead calm in afternoon. On Avro 430, Major Fulton 15 mins.; Lieut. Conran 15 mins.; Lieut. Roupell 10 mins.

On Maurice Farman 411, Sergt. Stafford 10 mins; Air Mechanic McNamara 12 mins.; Leading Seaman Bateman 8 mins.; Sergt. Street 8 mins.; Lieut. Longmore with Air Mechanic Collis 10 mins; Air Mechanic Collis 12 mins.

On Maurice Farman 415, Major Trenchard 10 mins.; Asst. Paymaster Lidderdale 18 mins.; Engr.-Lieut. Randall with Chief Mechanic Scott 20 mins.; Master Mechanic T. O'Connor with E.R.A. McCarten 10 mins.; Air Mechanic Higginbottom with Chief Mechanic Pack 10 mins.; Major Trenchard with Mr. Dobson 6 mins.

On Maurice Farman 427, Lieut. Bigsworth 21 mins.; Lieut. Holt 28 mins.

On Maurice Farman 431, Lieut. Glanville 24 mins.; Lieut. Vernon 9 mins.; Lieut. Arthur 45 mins., to 6,500 feet.

On Maurice Farman 428, Lieut. Marix 23 mins; Lieut. Kennedy 15 mins.; Lieut. Unwin 15 mins.; Capt. Salmond, R.F.A., 10 mins.

On Maurice Farman 426, Lieut. Harvey 16 mins.; Capt. Salmond, R.F.A., 10 mins.; Lieut. Boyle 15 mins.; Lieut. Marix 10 mins.

On Short 401, Major Gerrard with Capt. Vivian 40 mins., and 5 mins. alone. On Short 402, Capt. MacDonell 20 mins.; Sergt. Vagg, 10 mins.

On B.E. 417, Capt. Salmond 6 mins. alone, with Lieut. Thompson 40 mins. Lieut. Cholmondeley with Capt. Conner from Lark Hill on Maurice Farman 214 and returning.

Hendon.—At W. H. Ewen School, Lieut. Spenser Grey on 70-h.p. Caudron.

At Deperdussin School, Lieut. Spenser Grey out on 100-h.p. machine for 25 mins., in excellent style.

At Grahame-White School, pupils out early, Mr. Lan Davis rolling, and straights with Mr. Manton. Mr. Carr straights, Mr. North rolling. Mr. T. Bayetto straights on No. 4 mono under Mr. Chevseman.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight out before breakfast testing biplane and No. 3 mono. Mr. Barnwell in forenoon on biplane testing.

At Bristol School, Mr. Merriam for trial. Lieut. Picton Warlow straight flights, Lieut. Blatherwick circuits. Lieuts. Peirse and Morgan with Mr. Merriam.

Salisbury Plain (Bristol School.).—In afternoon Mr. Pixton with Lieut. Bromet, R.N. Mr. Paschen on mono. M. Jullerot on 50-h.p. mono, Lieut. Griffiths on biplane and Mr. Paschen on mono. Lieut. Read and Mr. Tod round Fargo, M. Jullerot as passenger with "Sociable" mono later on.

Windermere.—Lakes Flying Co. Mr. Adams out with Mr. Bland (pupil) on "Water Hen."

Dover.—Lieut. Babington arrived on M. Farman biplane from Eastchurch with passenger, returning later on in high wind.

THURSDAY, March 27th.

R.F.C., Central Flying School.—Misty; calm till 11 a.m., then freshening S.W. wind. On Avro 430, Major Fulton with Lieut Ross 20 and 30 mins., with Lieut. Oliver 5 and

15 mins. with Air Mechanic Harrison 20 mins.; Lieut. Conran 10 and 12 mins.; Lieut. Oliver 8, 10 and 15 mins.; Lieut. Roupell 12 and 15 mins.

On Maurice Farman 415, Higginbottom, A.M., with Baldock, A.M., 7 mins., then 90 mins. to Whitchurch; lost his way and in landing at Winchester smashed machine in golf bunker.

On Maurice Farman 411, Lieut. Longmore with Air Mechanic Savill 20 mins., with Turner, A.M., 24 mins., with Sergt. Robbins 26 mins.; Collis, A.M., 18 mins.; Sergt. Kemper 12 mins.; McNamara, A.M., 27 mins.; Leading Seaman Bateman, 9 mins.; Sergt. Street, 18 mins.

On Maurice Farman 427, Lieut. Small 30 and 47 mins.; Lieut. Soames 57 mins.; Lieut. Arthur 85 mins.; Lieut. Bigsworth 25 mins.; Lieut. Vernon 29 mins.

On Maurice Farman 431, Capt. MacDonell 17 mins.; Lieut. Vernon 14 mins.; Lieut. Bigsworth 24 mins.; Lieut. Glanville 47 mins.; Lieut. Holt 28 mins.; Lieut. Longmore with Collis, A.M., 47 mins.

On Maurice Farman 428, Lieut. Marix 7, 8 and 22 mins.; Capt. Salmond, R.F.A., 20 and 22 mins.; Lieut. Kennedy 7 mins.; Lieut. Boyle 12 mins.; Lieut. Unwin 15 mins.

On Maurice Farman 426, Lieut. Harvey 10 mins.; Lieut. Boyle 15 and 20 mins.; Capt. Salmond, R.F.A., 12 mins.; Lieut. Kennedy 15 and 33 mins.; Lieut. Unwin 22 mins.; Lieut. Harvey with Lieut. Spencer 15 mins.

On Short 401, Capt. MacDonell 10 mins.; Major Gerrard with Leading Seaman Ashton 5 mins., with Capt. Vivian 5 mins., with Lieut. Read 5 mins., with Sergt.-Major Levick 10 mins., with Lieut. Littleton 18 mins., with Lieut. Rathborne 10 mins.; Sergt. Vagg 10 mins.; Capt. Vivian 55 mins.; Lieut. Read 20 mins.; Lieut. Rathborne 20 mins.

On Short 402, Major Gerrard 5 mins. alone, with Leading Seaman Ashton 10 mins.; Capt. MacDonell 18 mins; Leading Seaman Ashton 15 mins.

On B.E. 417, Capt. Salmond with Copper, A.M., 12 mins., with Lieut. Kennedy 40 mins., with Sergt. Rigby 8 mins., with Lieut Unwin 17 mins, with Lieut. Harvey 43 mins., with Lieut. Marix 37 mins., with Lieut. Thompson 22 mins., with Lieut. Boyle 32 mins.; Lieut. Dawes 8 and 18 mins. Major Higgins on B.E.205 from Lark Hill and returning.

R.F.C., Farnborough.—Calm and bright. On B.E.206, Lieut. Joubert 45 mins. alone at 1,200 and 16 mins at 1,000 with Sergt-Major Thomas, 10 mins. with Lieut. Waldron; Lieut. Waldron rolling and circuit, then straights, then 10 mins. at 500 and 15 mins. at 800. Lieut. Joubert again 10 mins. at 500, with Lieut. Waldron; 83 mins. alone; 12 mins. at 400 with Griggs, A.M.; 5 mins. at 1,800 with Sergt.-Major Thomas; 15 mins. with Mechanic Griggs at 1,000.

On Maurice Farman 305, Capt. Reynolds 35 mins. alone, 45 mins. with Capt. Board, 15 mins. with Capt. Beor, 10 mins. with Sergt. Bateman; Capt. Piggott 33 mins. alone, 10 mins. with Lieut. Playfair; Lieut. Atkinson 10 mins. alone, 10 mins. with Mechanic Porter, 55 mins. with Lieut. Chinnery, 45 mins. with Lieut. Gould, 40 mins. with Capt. Board; Lieut. Gould 20 mins. On B.E.220, Capt. Darbyshire 23 mins. alone, 23 mins. with Capt. Beor, 45 mins. with Lieut. Playfair, and 25 mins. with Goodgame, A.M.

On Cody 304, Lieut. Harrison 6 mins., and Mr. Cody 5 mins.

On F.E. type biplane, 100-h.p., Mr. de Havilland testing all afternoon, and towards evening received injuries in landing, also smashing machine.

Hendon.—At W. H. Ewen School, Lieut. Usborne, R.N., on 35-h.p. Caudron, circuits and figures of eight, and took brevet brilliantly. Lieut. Spenser-Grey, R.N., on 70-h.p. Caudron with Mr. Sassoon, 45 mins. Lieut. Malone, R.N., on 80-h.p. Caudron, 45 mins. Commander Schwann, R.N., on 70-h.p. Caudron, 20 mins. Messrs. Zubiaga, Stewart and Torr straights. Mr. Pendlebury and Lieut. G. Adams rolling on 28-h.p. Caudron. Later, Lieut. Spenser-Grey for an hour on 80-h.p. Caudron and on 70-h.p.

At Deperdussin School, Mr. Bauman on No. 2, 45 mins., rolling and long hops, made heavy landing but did little damage.

At Bleriot School, Capt. Cox and Mr. Williams on No. 2 taxi. Messrs. Loftus Bryan, R. Desoutter and Clappen all straights.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight on biplane before breakfast. In afternoon Mr. Barnwell on No. 5 about 20 mins.

At Bristol School, Mr. Merriam with Lieuts. Picton-Warlow, Morgan and Peirse. Two former alone.

After breakfast Lieut. Blatherwick for his certificate. Style excellent testimony to instruction at the School. Mr. Merriam later with Lieuts. Gordon, McClellan, and Peirse. All out later, also Lieut. Broder (new pupil).

At Howard Flanders School, Mr. Raynham straights on A.B.C. biplane, then circuits for 20 mins.

Salisbury Plain (Bristol School).—Lieut. Bromet, R.N., with Mr. Pixton. Lieuts. Read and Griffiths rolling on mono. M. Jullerot took Mr. Tod on "sociable" mono. Mr. Paschen on 50 h.p. tandem mono. Mr. Pixton with Lieut. Bromet round Knighton Down, pupil having charge most of time.

Windermere.—Lakes Flying Co. Mr. Bland on "Water Hen" with Mr. Adams, Flying 10 or 11 miles.

Dover.—Mr. Hamel, with passenger, flew to Calais. Another machine was seen crossing over Dover.

FRIDAY, March 28th.

R.F.C., Central Flying School.—Strong East wind. Rain. No flying.

Hendon.—At Bleriot School, Mr. Hamel flying in bad wind with Miss Trehawke-Davies on her tandem Blériot.

Brooklands.—At Vickers School.—In afternoon Mr. Barnwell on biplane with Mr. Waterfall.

At Bristol School.—In afternoon Mr. Merriam with Lieut. Peirse, but weather too bad for school.

SATURDAY, March 29th.

Hendon.—Mr. Hamel on Miss Davies' tandem Blériot in very bad wind. M. Verrier with passenger on M. Farman, and M. Chevillard later on H. Farman, assembled in two hours, taking Miss Davies for one of his worst dives.

R.F.C., Central Flying School.—Strong East wind. Rain. No flying.

Brooklands.—At Vickers School, Mr. Knight on biplane solo. Mr. Barnwell with Mr. Waterfall. Captain Wood on biplane, Mr. Barnwell with Mr. Waterfall promoted to front seat. Mr. Blatherwick on No. 3 mono doing well at his first attempt on mono, getting off after couple of taxi straights.

At Bristol School, Mr. Merriam with Lieuts. Broder and Peirse. Lieuts. Picton-Warlow and Morgan alone.

Salisbury Plain (Bristol School).—Mr. Pixton with Lieut. Bromet, R.N., on biplane. Lieut. Griffiths alone in strong wind. M. Jullerot with Lieut. Bromet.

SUNDAY, March 30th.

Hendon.—Splendid exhibition. (See special report).

R.F.C., Central Flying School.—Strong West wind. Showers. Brighter.

Brooklands.—At Howard Flanders School, Mr. Raynham straights on A.B.C. biplane, then circuits for ¾ hour. Then with Mr. Flanders, and later with Mr. Dukinfield-Jones. Mr. Raynham circuits till dusk. Speed about 50 m.p.h., with slow speed about 30 m.p.h.

At Vickers School, in afternoon Mr. Barnwell on No. 5 at 3,000 ft. for half an hour. Then on a biplane with Mr. Waterfall, and Mr. (pilot) Knight on No. 3 mono with Mr. (pupil) Knight. Mr. Barnwell on No. 3 with Mr. Blatherwick. Mr. Knight on biplane with Mr. Waterfall.

Mr. Hamel and Miss Trehawke Davies arrived from Hendon and returned. Later M. Chevillard, with Mr. Greswell, on H. Farman, and M. Verrier on M. Farman called on way to Farnborough.

The Monaco Hydro-aeroplane Meeting.

The Eliminatory Trials for the Monaco Hydro-Aeroplane Meeting commence to-morrow, and continue till the 11th. On the 12th and 14th the race for the "Grand Prix" takes place. This will be the first great event of the year, and should be highly educative, in view of the "Daily Mail" £15,000 prizes. The quickest and most comfortable route to Monaco is via Calais or Folkestone to Paris, and thence by the P.L.M. to Monaco.

An Accident to Mr. Flanders.

A very severe motor cycle accident occurred to Mr. Howard Flanders on Monday last. As this paper goes to press, he lies in a critical condition in Walton Cottage Hospital.

Mr. Hamel's Weird Experience.

On Thursday last, the 27th, Mr. Gustav Hamel had what he described to the writer as the most extraordinary experience in his career as an aviator. He had started from Dover with a passenger on the brand new 80-h.p. Blériot with which he has been carrying out certain experiments there recently, his intention being to fly across the Channel. The machine does well over 70 miles an hour, and as there was a favouring wind he expected to make the journey in an extremely short time. The machine started at a big pace, and a few miles out to sea ran into a thick, cold fog, so Mr. Hamel kept at a height of only 1,000 feet, in sight of the water.

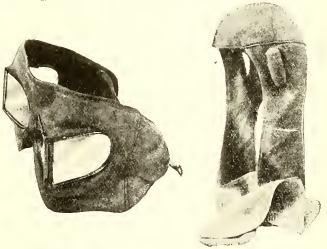
After flying for something over 20 minutes he thought he ought by then to be somewhere near the French coast, but nothing appeared. Presently he sighted a fishing boat, and instead of the machine shooting past it, it approached it quite slowly, and took some time to lose it again. Then the same thing happened again with another boat, and Mr. Hamel began to realise that instead of flying at between 90 and 100 miles an hour as he expected he was actually flying very slowly indeed. The engine was giving its full number of revolutions, and the machine was flying quite steadily, but the fact remained that he was making very little progress.

Finally, after flying for just on an hour he espied the French coast almost at the spot for which he was making near Calais, showing that he was on his true course. As soon as he had left the sea and got over the land he came into clear weather, and the machine promptly shot forward at the 90-miles-an-hour gait at which it had left the English coast. However, as the crossing had taken so long, it was not worth while going very much further, so M. Hamel turned round and descended in the "Place" in Calais itself just at the end of the boat pier, and within two or three minutes' walk of the boat itself, so that all he had to do was to take the wings off the machine, roll her on board the boat and bring her back by the boat leaving half an hour after his arrival.

Now the extraordinary thing is that with a comfortable westerly wind at Dover and a very much stronger westerly wind at Calais there was an absolutely reverse wind a few miles to seaward of each. The only possible explanation seems to be that the tide coming up Channel comes off Cape Grisnez in a north-westerly direction exactly opposite to the direct south-easterly course from Dover to Calais. The cold water condensing the warm air would draw it down so fast and in such quantities that the actual current of air following the direction of the tide would be very much higher in speed than the speed of the tide itself, and so would set up between the two coasts quite a strong stream of wind in the opposite direction to the wind on each side of and above it. This wind having a downward tendency also would compel the machine to fly in a climbing position all the way, so as to maintain the regular height of 1,000 feet at which Mr. Hamel was flying. Consequently, taking the adverse wind and the continual climb into consideration, his speed horizontally over the sea was reduced from its normal 70 miles an hour to something very like 20, which only shows the queer conditions with which aviators have to contend on occasion.—C. G. G.

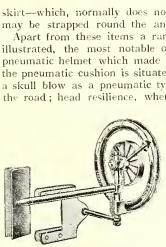
The New Dunhill Catalogue.

Dunhill's, who specialise in aviation equipment have issued a fascinating catalogue illustrating their various productions in that sphere. Particularly attractive and workmanlike are the several patterns of overalls illustrated, which vary in price from six shillings and sixpence to ten guineas, and in material, from blue dungaree to fleece-lined leather. The ladies' aviation costumes also appear to be both seemly and efficient, a most original arrangement being devised by which the divided

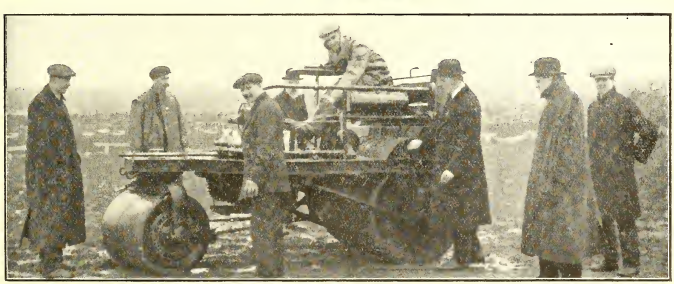


skirt—which, normally does not appear to be divided at all—may be strapped round the ankles when desired.

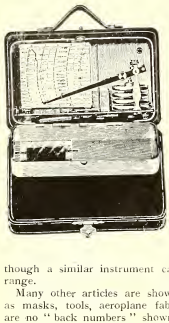
Apart from these items a range of well-designed helmets is illustrated, the most notable of which is, perhaps, the new pneumatic helmet which made its début at the recent show; the pneumatic cushion is situated in the crown, and distributes a skull blow as a pneumatic tyre does the blow of a brick in the road; head resilience, whether inherent or artificial, is a highly desirable property in an aviator. Among the caps, there is one in Jaeger fleece with long scarf ends, which looks exceedingly comfortable and warm.



Many ladies' hoods, bonnets, and caps are illustrated, none of which are unbecoming, and all of which are obviously well adapted to their purpose.



Mr. Grahame-White on his new mount.—The motor roller at Hendon.



A combination of eye-guards and goggles in leather, with four glasses, looks particularly neat; in fact, there is something very "convincing" about all these articles of equipment, which gives one the impression that they have been designed by people who realise what is required.

Among the numerous instruments illustrated is the neat little "Saff" safety air-speed indicator, by means of which the aviator is kept aware of any wind disturbances that may take place during his flight. Another interesting instrument is the compact pocket barograph, which weighs only a pound, and registers up to 4,000 ft., though a similar instrument can be supplied with a greater range.

Many other articles are shown in the new catalogue, such as masks, tools, aeroplane fabric, lamps, maps, etc. There are no "back numbers" shown, the catalogue is right up to date.

Mr. G. T. Temple.

Mr. G. T. Temple, who is a younger brother of the late Sir Richard Temple, Bart., is proprietor of the Temple Flying School at Hendon, and father of Mr. G. Lee Temple, who is responsible for the executive work of the school. He is a retired lieutenant of the Royal Navy, a fellow of the Royal Geographical Society, and a man of some considerable achievements.

In his younger days he saw a good deal of active service in many parts of the world, but probably his greatest distinction was the navigation, in winter and without a pilot, of one of the most dangerous coasts in the world, that of Norway and Lapland, a feat which was supposed until that time to be impossible. As a result of this and other voyages Mr. Temple compiled "The Norway Pilots," or official sailing directions, for the Admiralty. He is also the author of numerous pamphlets and reviews dealing for the most part with travel and exploration, and has read papers before the Geographical Society and the British Association.

In connection with his Norwegian work Mr. Temple has been decorated with the Cross of Knight, first class, of the Order of St. Olaf. His keenly modern bent of mind is shown by the support he has given his son in learning to fly, and more recently in starting the Temple School of aviation, which promises to be very successful.



Mr. G. T. Temple.

The Australian Aeronaut Again Over London.

Captain Penfold, the Australian aeronaut, made a second voyage across the metropolis on Easter Monday, this time from Alexandra Palace with Mr. A. E. Gaudron on a new balloon. The wind, blowing from the north-east, carried them to the south-west.

The start was made at 4 p.m., and a steady breeze carried the voyagers towards Hampstead Heath, where the fun of the fair could be seen in full swing. The balloon cruised at about 1,500 feet. The aeroplanes could be seen flying at Hendon. The aeronauts were desirous of reaching Brooklands Aerodrome, but as the wind dropped the voyagers were reluctantly compelled to land at Mr. Leery's, Slade Farm, Ockham, a few miles from Horsley, at about 6 p.m.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.
For the convenience of Advertisers, replies can be received at the office of The Aeroplane, 166, Piccadilly, W.
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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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SCHOOL OF FLYING. See special announcement in tuition column, page 406.

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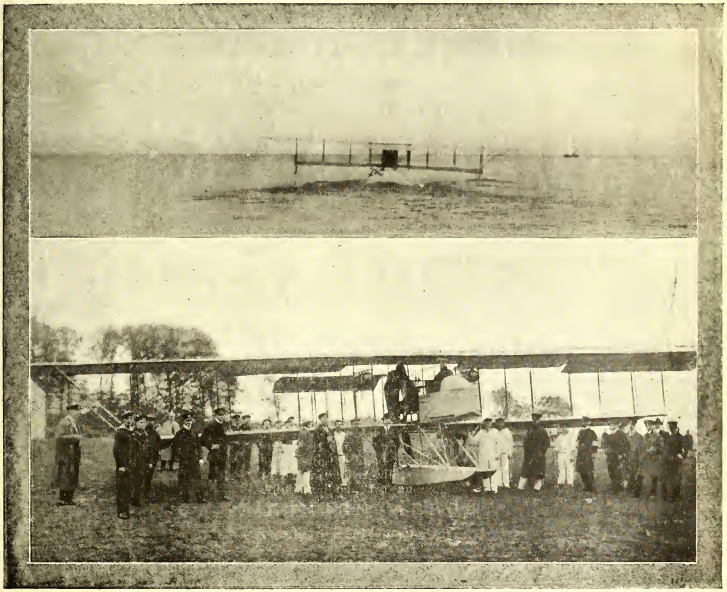
THE AEROPLANE

Edited by C. G. GREY. ("Aero Amateur")

1d. WEEKLY

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, APRIL 10, 1913. No. 15.

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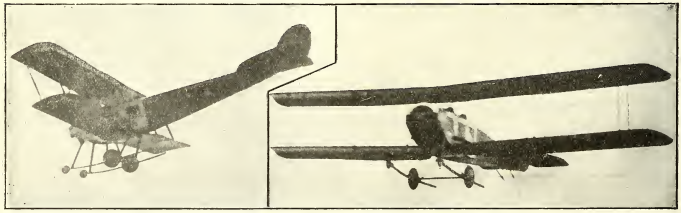
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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London.

Divided Unity.

In the early days of last year, before anyone knew much about the work air-scouts would have to do, before the Turco-Italian War and the Balkan War had given us a faint idea of the conditions of active air-service over land, and before experiments here and abroad with waterplanes had shown what an utterly different proposition they are from land-going machines, an enthusiastic Under Secretary of State, assisted by advisers who at the time knew but little more about the problems before them than he did himself, evolved a composite body which was officially christened the Royal Flying Corps, and was referred to by the enthusiast as "the corps d'élite of the British Army." This corps was to be formed of soldiers and sailors, and there was to be a "reserve" composed partly of sailors and soldiers who did not wish to, or could not, be put on the permanent establishment, and partly of civilians, to whom a hope was held out that they might become permanently officers on the active list of His Majesty's Army, though, strangely enough, nothing was said about any of them becoming officers in the Navy.

The idea of the inventors of this novel corps was that it should have a Naval Wing trained specially for naval work, and a Military Wing trained to operate with troops in the field; both wings, however, were to learn the art of scouting over troops and were to study "warships of all nations," a hermaphrodite kind of education which was supposedly to fit the members of the corps for use with the Navy in a naval war and with the Army in a land war. Apparently to complete the amphibious nature of their training, the Central Flying School was founded on the crest of a wave of the waviest part of England—Salisbury Plain—but well away from the sea, and a Post-Captain of the Navy was put in command, with an assorted staff of sailors, soldiers, and marines under him.

This branch of the corps has undoubtedly proved the most effective up to the present, for it has apparently been as clever in obtaining aeroplanes for itself as the Australians in South Africa were in getting horses; the amount of flying done has been enormous, the casualties—except to machines—have been few, and the number of really good pilots turned out has been very high in proportion to the pupils. Still, one is forced to put this success down to the high mental and moral qualities of the executive staff at the school, and not to the principle of mixing sailors, soldiers, marines and civilians, which has won for the corps as a whole the nickname of "The Ultra-Marines."

In a way, the excellent results obtained at, and the smooth working of, the Central Flying School has been the worst thing that could have happened for the aerial defences of this country, as the C.F.S. supplies the only really sound argument for a comparatively new scheme which, if it is carried through, will be not only a public danger, but will be the personal ruin of some of the best officers in both the King's Services.

That scheme is the foundation of a third Service, separate from the Navy and Army, but allied to both and subservient to neither. The scheme has the support of one or two journalists whose ignorance of the men, manners, customs, and conditions of the Services is colossal. It also appears to appeal to a few members of Parliament who are equally ignorant, and perhaps to an infinitesimal number who ought to know better. And it also seems to suit a small number of sailors and soldiers, though goodness only knows why, because ninety-nine out of every hundred Service men with whom one discusses the subject are dead against it, and agree that the idea is futile in its inception, impossible in practice, and ruinous in prospect.

The Pros of the Question.

At present, the Royal Flying Corps is a joint concern with a common middle in the Central Flying School and two very distinct ends at Farnborough and Eastchurch, and those ends are rapidly growing farther away from one another, as I hope to prove beyond doubt. Still, as I always believe in letting the other man have his say, I will first give the only arguments I have heard in favour of the combination scheme, which is, I believe, regarded hopefully as the embryo of the Third Service.

Firstly, it is supposed to be economical. We only train one lot of pilots, and we thus avoid keeping idle naval pilots if engaged in a land war, or idle military pilots in a naval war.

Secondly, it is said that if you take a naval officer away from his ship for four years with the R.F.C., he becomes so disused to Service routine, and so devoid of any ideas outside aeroplanes, that he has become useless as a watch-keeper, gunnery Jack, or whatever he may have been with success before, and that soldiers, similarly, will get out of touch with regimental routine.

Thirdly, it is argued that, by forming a third Service, built on a basis of "brave young men who will have opportunities for doing daring deeds"—to quote one of Colonel Seely's pet phrases—it will be possible to produce new traditions and customs which will give this Service a higher moral and practical value than either of the two older Services.

Fourthly, there is the claim that, as aeroplanes in war will fight their own battles in the air before any other fighting is done, their strategy and tactics will be so different from those of the other Services that a new Service is needed.

Those to the Contrary.

In reply to the first of these arguments one may point out that a man who is not trained for a job is the most expensive man to do it. If a pilot who has made a study of military aviation is put on to naval work he will be of less value than a naval pilot, and will cost as much to keep, and *vice versa*. As aeroplanes develop, the breach will widen. For example, can one imagine the pilot of a 2,000-h.p. waterplane being of any real use if sent out on a 100-h.p. 100-mile-an-hour land machine and asked to land it in a twenty-acre field? Or what would happen to the pilot of a land-going three-seater fighting machine if turned on to handle one of the tiny single-seater sea-scouts and launched from a catapult over the bows of a thirty-knot mother-ship? It is very well to say that they would be all right with a little practice. That may be

a good enough answer for a politician who proposes that one of the daring deeds of these brave young men shall consist in flying on active service in the worst conditions of ground and weather on machines that are considered unsafe in peace; but it will not do for those of us who want to see the Royal Flying Corps one of the most efficient branches of the Army, and who recognise that the Royal Naval Air Corps—as the present Naval Wing may be—has an entirely different job.

If the maximum efficiency is to be obtained the work of the pilots must be even more closely defined than by keeping each to his own Service. The pilot of the fast single-seater must not be asked to fly a fighting machine, nor must the pilot of the big waterplane be asked to fly a catapult scout. Take a very simple concrete instance. Get the three pilots best known in this country for really clever flying—Messrs. Hamel, Verriei, and Chevillard—to change machines and see what they could do. It would take months for any one of them to be as good on his new mount as he is on his present machine, and quite conceivably none of them might ever be as good, for one type suits one temperament and another does not. The same thing is even more true of less clever fliers.

It is true that one Service may at times borrow detachments, machines and all, from the other Service. For example, when we set about "civilising" the Putomayo district the Army may be glad of a flotilla of armed waterplanes a few thousand miles up the Amazon; and when German transports try to land troops in Bantry Bay, as the French did about a hundred years ago, the Navy may find use for a number of military war-planes; but, as a rule, mixing the Services produces a worse muddle than does mixing drinks; and mixing up pilots and strange machines is simply murdering pilots. The only plan productive of efficiency is one man, one machine, one duty, one Service.

The Time-Expired Man.

It is the official opinion at present that no man can stand more than four years' flying, even in peace. At the present time, when pilots fly anything they can get, and often have to fly machines they know to be in a dangerous condition rather than not fly at all, it is probably true. But men who fly one make of machine, which they know and can trust, have already done more. For example, MM. Blériot, Henry and Maurice Farman, Léon Morane, Legagneux, Alec. Ogilvie, Frank McClean, Grahame-White, and others have flown for more than four years, and several of them are flying more and better now than they did a year or two ago. As machines improve and accidents are less frequent, the time of flying will extend; but even then some men's nerves will go, just as cavalry-men and gunners lose their nerve to-day, especially after a bad smash. If we have a distinct third Service, what are we going to do with our pilots at the end of their four years' flying, or if their nerve goes? We cannot pension off the whole stock of pilots every four years, and, mean as we are to the defenders of the country, we cannot turn them out as useless onto a cold and unsympathetic world. The simple solution of the difficulty seems to be to recognise the fact that any pilot is the better for a rest at intervals. If he does not really need it he will be all the keener to get back to his air corps. Is there any particular difficulty in letting a man fly for a stated period, say, a year or two years, and then giving him six months' or a year's rest in a line regiment or at sea, according to his Service? During that period he would become a better soldier or sailor, as the case might be, and so would be more valuable when he returned to flying. It would not upset things any more for the squadron commander in charge of a waterplane station to go to sea than for the skipper of a submarine to go as second in command of a cruiser, or for an adjutant of Territorials to rejoin his own regiment. Necessarily certain of the senior officers on purely executive duty in either the naval or military air corps would have permanent billets, for they would have to see that the routine work was run regularly; but the rest of the corps would vary, just as does the staff at the Admiralty or War Office to-day.

The High Moral Standpoint.

The idea of a separate Service of high moral tone and traditions is, of course, purely fatuous. The last men in the world to think of such a thing are the officers who fly. They are themselves the first to scoff at sentimental gush about "brave young men" and "daring deeds." They are more free from "side" than almost any officers in the Services, and any one of them who dared to show that he thought they were any kind of hero would be unmercifully ragged. In fact, most of them spend quite a considerable time reducing one another to a properly humble state of mind by each impressing on the other that his idea of flying is very rudimentary and that he survives more by luck than judgment. Only recently one officer who has done some very fine flying said to me in the presence of another excellent pilot to whom he was referring: "Oh! You know So-and-so's idea of landing. Here's a machine, there's a field; one has got to go on top of the other, and he puts it there!" Such a remark is not exactly the way to make a pilot conceited, and the effect of that sort of thing is most salutary. If we produce a thoroughly efficient branch of each Service, the members of which branches have a properly exalted idea of their collective value and a properly humble opinion of their personal worth, we shall be very near perfection. To exalt the members of the corps is to encourage the type of man who is always hunting for distinction, and is generally most unpopular in his regiment or ship, and often an inefficient officer.

Fighting Their Own Battles.

The idea that, because the aeroplanes will fight their own battles before the armies or the fleets engage, they should form a separate Service and have an "Air Office" is about as sensible as suggesting a Secretary of State for Horse because the cavalry screens of two armies are in touch for days, or perhaps weeks, before the armies actually engage, or as insisting on a First Lord of the Submarines because these vessels will probably be the first to go into action in the next naval war. Air scouts are now as much an integral part of any army as are cavalry scouts, and armed aeroplanes for action against hostile air-scouts or dirigibles are as purely concerned with army matters as are field guns. Similarly, a squadron of heavy waterplanes is as much a part of the Navy as is a flotilla of T.B.D.'s or submarines, while the smaller aircraft to be carried on board ship belong to the ship's equipment just as much as does the skipper's galley.

A Few Other Objections.

Here are just a few of the objections to a "Third Service" brought up in discussion the other day by a naval officer of somewhat varied experience:—

(A) To be really efficient the "Air Office" would have to be a huge affair, entailing separate sub-departments to control victualling, finance, contracts, intelligence, engineering, wireless telegraphy, armament, and so forth. In fact, it would have to be as big as the War Office or Admiralty, and as expensive to run, for one would need as many heads of departments, and the only saving would be in the number of minor officials, who do not cost much.

(B) If an entirely separate Service existed, who would control aviators serving on board ship? Would they be more independent than marines, and what would they do with themselves on board when not required to fly? Worse still, what would the mechanics of the Air Corps do when the machines were stowed below deck and needed no work done to them?

(C) Would Air Corps officers keep watch, and if able to do so wherein would they differ from ordinary naval

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officers; and would they also be expected to know equally as much about infantry drill?

(D) What would happen to pilots of the Air Service when they wanted assistance at sea from ships, or, on landing, from the nearest dockyard and its equipment? Would they have to send everything to the R.A.F. at Farnborough to be repaired, or would the "Air Office" establish its own dockyards round the coast and inland as well?

(E) The Navy is already short of officers, and the Admiralty would scarcely allow present officers to join an entirely separate Service if those officers were never going to rejoin the Navy after they had finished flying, nor would the Navy itself put up with a contingent of pilots and mechanics on board ship who might at any moment be called off for land service. Such men would never become members of the crew, and would always be a nuisance. They would have none of the Service tradition or feeling when they joined, and it would be waste of time hammering it into them.

(F) Even the present system of a joint corps entails a heap of unnecessary waste of time and trouble settling questions between the War Office and Admiralty. An entirely separate Service would not decrease these, and would add to them a fresh set of complications. The mere turning over of two or three pilots and their mechanics from a ship to the Army would cost more in correspondence between the War Office, Air Office, and Admiralty than would pay for keeping the same number permanently with the Army and letting the others remain in their ship

"United We Fall."

It was suggested to me that perhaps some soldiers favoured the idea of a separate Air Office because anything would be an improvement on the War Office. This is by no means true, for the War Office in itself is an excellent institution. But what is badly needed is a new department in the War Office to deal exclusively with aircraft, on tree and independent lines, similar to those adopted by the Air Department at the Admiralty. At present, no one seems to know who is responsible for aircraft, and it is not an unknown thing for two different departments at the War Office to send out an order for the same article.

Centralise the control of the Royal Flying Corps—as a regiment of the Army, similar to the Royal Artillery or the Royal Engineers—in one department of the War Office, and it will be in a fair way to effectiveness in its own way. No one expects the Royal Engineers to supply the engine-room ratings in the Navy, so why should the R.F.C. supply naval aeroplane pilots?

Airships of any size and hydro-aeroplanes will always be under the Admiralty, so where is the need for a third Service so far as they are concerned? Anything else must belong to the Army, so why mix them?

Although, of course, as an island Power, the Navy must necessarily be stronger and more up to date than the Army, still we cannot afford to let our military forces drop behind in the use of the new arm. The Navy is already doing excellently in air work. The Army will do as well when given the chance. A third Service combining the two would ruin the efficiency of both, and would do no one any good, except that it would give permanent jobs to a favoured few, and we have already had more than enough delay.

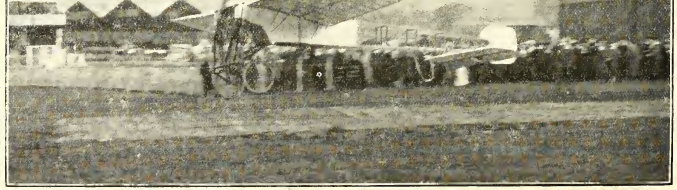
His Majesty the King has been pleased to grant to the Military Wing, R.F.C., an official motto, *"Per ardua ad astra."* The composer of it is not known, but it has been freely translated as "Land hard and see stars." For a mongrel third Service the best motto would be: "Divided we stand; united we fall."

C. G. G.

That Rolling Test.

It is really time something was done to stop the waste of public money through that absurd "rolling test" devised by the staff of the R.A.F. at Farnborough. Naturally one requires machines which are able to start from and land on bad ground, but the notion that rolling at 20 m.p.h. for half a mile over the worst part of Laffan's Plain is any proof of such ability only shows how utterly unpractical some of these pseudo-scientists are. No pilot would be such a fool as to do such a roll when flying on service, either in peace or war. In starting he would pick out the best hundred yards or so, facing the wind, and go at it "all out" so that he would have nearly all the weight taken up by the wings before he had gone 50 yards, and in landing he would "pancake" and only roll twelve or fifteen yards. The result of this idiotic test was that last week M. Chevillard smashed a spar of a brand new Henry Farman, through a bump knocking the chassis up. And M. Noël broke the propeller of the 80-h.p. Henry Farman through hitting a bump, so that the propeller struck it on dropping after the machine had cleared it.

The number of military machines wrecked since Colonel Seely made his famous "101 aeroplanes" speech is almost keeping pace with deliveries of new ones. Two Bréguets were smashed by their temporary sheds falling on them at Farnborough during the recent gales. Air Mechanic Higginbottora had the bad luck to hit a golf bunker with a Maurice Farman. Major Raleigh "deteriorated" one of the Codys in practice at Farnborough. The Henry Farman mentioned above is out of action, and sundry other useful machines have been laid up by more or less serious breakages.



Mr. Hamel's quick start on Sunday. Starting by the sheds, he left the ground half-way along the causeway to the flying ground.



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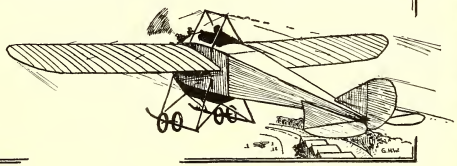
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A Third Service.

BY W. E. de B. WHITTAKER.

The genesis of the science of aeronautics was among civilian experimenters and theoreticians. The first flights on aeroplanes were made by civilians. The official heads of the world's naval and military forces watched with an apparent air of scepticism the first steps of a new science, aware though they might be of its importance in the wars of the future. Thus, the class of writer on this subject which has arisen is one of civilian training and interests. In this country, unless a man has served in one or other of the King's Services, he is, as a rule, entirely without knowledge of the method of living and working of those forces which guard his interests by night and by day. He regards such things with a sort of veiled contempt, unless his good fortune or his profession have taken him to places where bitter experience has taught people of what high value a trained army and navy may be.

The science of aeronautics has become military in its form. Aeroplanes and airships are designed for use under war conditions and not for pleasure cruises. But the aeronautical journalist knows no more of military needs than he did three years ago. With few exceptions, he has not adjusted his knowledge to the new conditions. To him, as to the general public, a soldier or a sailor merely fights, and there is no science at all in the carrying on of war. So does the method of the lead soldier of childhood's days affect the views of the grown man.

Yet withal he is forced to deal with military subjects. The gaiety of nations may be increased thereby, but there is something mournful in it all to those who see both sides.

Aeronautics is taking its due place in the armed forces of the world. It has no traditions and nothing precedent on which to base its form. It is a new arm in both the navy and the army, an arm which affects materially the method of the warlike operations of both. Hence, its inception is accompanied by great confusion and by mistake after mistake. It could not well be otherwise. Perfection cannot be reached in a year or a decade. Time alone can unravel the tangle.

I have recently listened to the views of six or seven aeronautical experts on one set subject. Each had different opinions, and no two present were in absolute agreement. Yet, though they cannot agree themselves, they expect an absolutely errorless aeronautical policy on the part of Government. It is also forgotten that, while their lives are bound up with things aeronautical, the duty of the Government lies in much broader fields. The non-military critic, unacquainted with naval and military organisation and unable to deal with the aerial confusion from the point of view of the soldier or the sailor, propounds his own plan for the regeneration of the aeronautical Service. Perhaps with originality or perhaps based on the scheme formulated a year ago by the Secretary of State for War, one critic has proposed the formation of a separate aerial force complete in itself and exempt from the control of the naval and military authorities. He goes even further, and suggests that an Air Minister should be appointed with, it is to be presumed, a seat in the Cabinet.

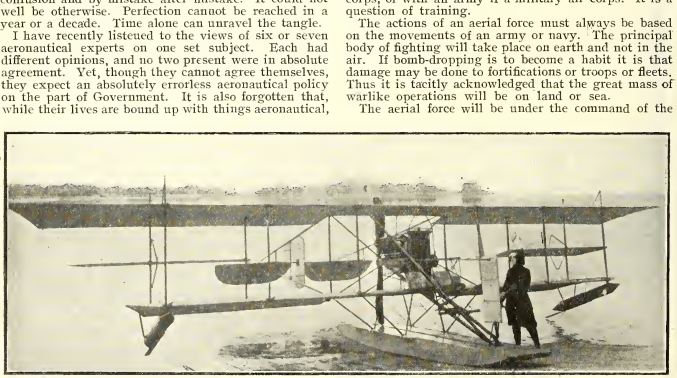
In propounding this scheme he is an absolutely free agent untrammelled by precedent. With a pleasing air of indefinity he can alter his points to meet any attack or in response to inspired criticism. He is not embarrassed by the axioms of Clausewitz or the pleasant platitudes of "Field Service Regulations." He can juggle with points of organisation as a clever mathematician with figures. Moreover, the idea of a separate air Service is one that appeals to the "man in the street." It suggests progress. It appears to be a concrete effort towards the formation of an adequate system of aerial defence. His anti-military sentiments are appealed to in that a new Service might be under the control of civilians. If not, why separate it from the two great Services? Thus it will be seen that such a scheme has the advantage of attracting such enthusiasm as is left to the public after the exhausting excitement of reading of Cup-tie results and of why Rathnally was scratched for the Grand National.

But there are a number of quite excellent reasons why a separate air Service is unnecessary and inadvisable.

The Army and Navy work separately because one is on land and the other on sea, and the conditions are totally different. The air is common to both. Therefore, those in the air operate with a fleet if a naval air corps, or with an army if a military air corps. It is a question of training.

The actions of an aerial force must always be based on the movements of an army or navy. The principal body of fighting will take place on earth and not in the air. If bomb-dropping is to become a habit it is that damage may be done to fortifications or troops or fleets. Thus it is tacitly acknowledged that the great mass of warlike operations will be on land or sea.

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An American waterplane. The Martin biplane at Los Angeles, California. Miss Florence Seidel, the pilot, is standing by the float.

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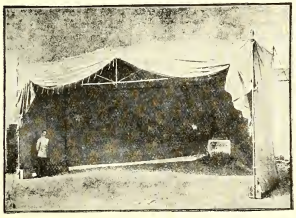
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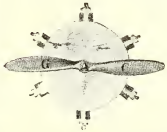
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same officer who controls the Army or the Navy with which it works. The personnel of the flying corps will be drawn from the Army and Navy, otherwise how will it receive adequate training in strategy and tactics? Its knowledge of these must be instinctive, and how can such be acquired without years of training?

There is little doubt that for many years to come the aeronautical Services will find their principle duty in the carrying out of extended reconnaissance. They will not deliberately assume the offensive under ordinary conditions. Aerial combats will be of the nature of engagements between cavalry patrols. They do not seek action, though circumstances may force it on them. As they carry out reconnaissances for an army or a fleet they will of necessity be an integral part of one or other of those bodies.

The originator of the scheme does not deny that the formation of such a Service could only be carried out with much trouble. Why, then, go to this trouble when by the simple process of leaving the aeronautical section an arm of each Service a high state of efficiency can be reached in a shorter time and with greater economy in men, training, and money?

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty appointments, March 31st:—

Lieut. S. D. A. Grey to the "Actæon," additional, as flight commander in command of Calshot Naval Air Station, to date March 29th.

Sub-Lieut. J. L. Travers, Royal Naval Reserve, to the "Actæon," additional, as flying officer, for Calshot Naval Air Station, to date March 29th.

Admiralty appointments, April 5th:—

Sub-Lieut. J. Babington to the "Actæon," additional, as flying officer, for Isle of Grain Air Station, to date March 27th.

From the "London Gazette," April 1st.—Regular Forces:—R.F.C., Military Wing.—Lieut. George I. Carmichael, Royal Artillery, to be a flying officer, and to be seconded. Dated March 11th, 1913.

On April 1st, at Buc, M. Henri Farman made trial flights on three biplanes (80-h.p. Gnomes) intended for the British Government. The rain fell in torrents during the trials.—W.

Squadron No. 2, Royal Flying Corps, stationed at Montrose, was inspected on Thursday, April 3rd, by Major Sykes, C.O., Royal Flying Corps. Arriving by train at 10.28, he was met by Major Burke and motored to Panmure Barracks. The corps was drawn up on parade at 11 a.m. and inspected by Major Sykes, who then proceeded to examine the barracks and buildings. After lunch the whole squadron motored to the base at Dysart, and each pilot gave an exhibition flight under the direction of Major Burke. At 3 p.m. the inspection concluded, and Capt. Longcroft, on a B.E., took Major Sykes as passenger to Edinburgh to catch the London train.—M.

The King has been pleased to approve of the Royal Flying Corps having as motto the phrase: "Per ardua ad astra"—("Through difficulties to the stars").

The Army Annual Bill for the year 1913-14 contains a clause allowing for the impressing of privately owned machines in time of war. This is similar practice to that obtaining in the case of motor-cars, etc., under similar conditions.

FRANCE.

At Chalons, in the presence of Captain Roussel and Lieutenant Maillert, M. Testulat took a Henry Farman biplane (70-h.p. Gnome) through its reception trials for the French army. This was on March 31st. Early on the same day, at Reims, an 80-h.p. Gnome Farman repaired for the army at the Farman Works was re-delivered after making several test flights.

On April 2nd, Lieutenant-aviator Ronin, with Sapper Pecquet as passenger, made a long flight in the vicinity of Epinal on a Borel monoplane. They landed for a brief time at Domrémy, the birthplace of St. Jeanne d'Arc.

The French death-roll is rising rapidly. Two fatal accidents to military aviators occurred on April 2nd. Adjutant-aviator Yves Faure was flying a Maurice Farman biplane at Buc at 10.30 in the morning; when at a height of 100 metres a control wire broke and, according to "Le Journal," he was at the same time caught in a remous. The machine then dived to earth. The pilot, who was not fastened in, fell out before the machine touched ground. The engine fell on him. This latter fact had nothing to do with his death; the fall alone would ensure that. He was of the 12th Regiment of Artillery and took his brevet (No. 1231) on January 29th at Buc. He was recently married. The other accident was to Quartermaster Chauroux at Amiens. He had just finished the tests for his military brevet, and was flying so low that on the turn the wing of his Hanriot monoplane touched ground and the machine overturned. He was killed at once.

Some interesting figures regarding the French Military Aviation Corps are given in the "Parlement et l'Opinion" by the editor, M. Raoul Persil. He says that, "In the beginning of 1913 the number of military pilots possessing the military brevet was 160. The number of civil pilots possessing the same brevet was 27. There were 253 pupils, many possessing the Aero Club brevet, finishing their training with constructors or in military centres. There were 421 aeroplanes on service in the army and 135 on order. Twenty escadrilles of twelve aeroplanes each were ready for service in the event of mobilisation."

An escadrille of R.E.P. monoplanes (80-h.p. engines) is shortly to be stationed at Poitiers. Six officers and thirty mechanics will form the personnel for the present.—W.

GERMANY.

T.R.H. the Crown Prince and Princess of Prussia visited the Johannisthal aerodrome on March 30th and spent some time inspecting the naval Zeppelin.

The Ministry of War has issued new regulations to constructors as to certain requisite features on all new military aeroplanes. They must be entirely of German manufacture. Comfortable seats must be fitted and ample space must be given to both pilot and passenger. The body work must be so designed as to permit of the fitting of a bomb-dropping outfit and a photographic apparatus. The minimum speed must be in excess of 55 m.p.h. The maximum dimensions permitted are as follows: Width, 14 metres 50; length, 12 metres; height, 3 metres 50. Each machine must be capable of carrying fuel for a flight of four hours. The engine fitted must not be in excess of 100 h.p.—W.

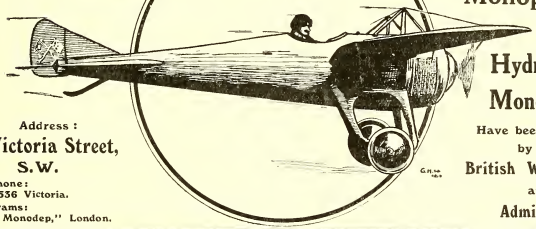
Lieutenant Canter, accompanied by Lieutenant Boluner, put up two new world's records with a flight of 595 kilometres, from Berlin to Malente, in 6 hours and 9 minutes. Lieutenant Canter, who first drew attention to himself by his reliable work during last year's manœuvres, has beaten the cross-country record held by Guilleaux (France), as well as Lieutenant Barrington-Kennett's world's record for a long-distance passenger flight of 4 hours 51 minutes.

The German War Office has ordered five Albatros biplanes built on the Bréguet type and fitted with 100-h.p. Argus motors. One has been delivered already.

Twelve Albatros monoplanes have been ordered by Bavaria, and a detachment of eight officers is being sent to Berlin-Johannisthal to be initiated in the manipulation of the machines.

The great strengthening of the German army, which calls for another four thousand officers alone, and will be carried through for the main part by October 1st, is of deep significance for the army and navy aerial services. The Bill allocates 130,000,000 marks for this purpose, eighty millions being the army's share of the sum. The aerial troops, which hitherto were commanded by one officer, will now have two inspector-generals, with four aviation battalions and five aeronautical

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battalions, using the existing formations as a foundation. Berlin will be headquarters in each instance; the staffs and companies of the four aviation battalions are to be stationed at Doeberitz, Jueterbog, Zeithain, Posen, Koenigsberg, Graudenz, Hanover, Cologne, Darmstadt, Strassburg, Metz, Freiburg, whilst the airship battalions are to be at Gaudenz, Koenigsberg, Schneidemuehl, Friedrichshafen, Metz, Lahr, Cologne, Duesseldorf, Darmstadt, Dresden, Hanover, and Berlin.

The majority of the naval airships and aeroplanes will be stationed on the North Sea coast; four double rotating hangars are to be built, as the navy is to control a fleet of ten first-class vessels as soon as possible. Added to this, fifty aeroplanes are to form its scouting staff, with one central and six peripheral stations.—B.

RUSSIA.

Lieutenant-aviator Alexander Cerlovsky, who was killed a week ago by a fall from a height of 650 feet, left a letter saying that he intended to commit suicide from his machine. He believed himself to be the victim of a conspiracy.—W.

BULGARIA.

It is reported that a Bulgarian military aviator destroyed on March 30th the wireless telegraph station at Gallipoli.—W.

TURKEY.

On March 29th the aviator Scherf, in the employ of the Turkish army, made a prolonged aerial reconnaissance of the Bulgarian lines before Chatalja. He had as passenger a Turkish Staff officer.—W.

MEXICO.

Señor Enrico Olarte, the Mexican Chargé d'Affairs, has received at the Mexican Legation in Paris thirty-one pupils from the military school at Tlalpam who have come to France to go through a course of military aviation. So do revolutionary countries keep pace with the revolution of warfare.

THE ARGENTINE REPUBLIC.

On April 3rd, at La Brayelle, Douai, before Colonel Mendes, Argentine Military Attache in Paris, M. Debussy flew a three-seated Bréguet biplane through the reception tests for the Argentine army. With a useful load of 400 kilos, he reached an altitude of 500 metres in nine minutes.—W.

FOREIGN NOTES.

France.

On March 22nd M. Gilbert flew over Lyons at 5.30 p.m. on a Morane-Saulnier monoplane. His place of departure was Ambérieu, where he has been for some days.

M. Brindejonc des Moulinais, flying a Morane-Saulnier monoplane on March 24th, left Issy des Moulineaux at 8 a.m. and landed at the Croix d'Hins aerodrome at Bordeaux at 4.45 p.m. He made several descents en route, the longest being at Poitiers and Couhé-Verac.

During this Easter-tide the Blériot aerodrome at Buc has seen much flying. Perreyon, the indefatigable pilot, spent the greater part of his time at high altitudes. On Easter Monday he gave the baptism of the air to Mlle. Hinot, a niece of M. Blériot. It is said of this gracious damsel that it was with the profoundest regret that she returned to this planet. M. Blériot made a long journey over the surrounding country on a fast machine. Towards the close of the day M. Perreyon flew on the Canard Blériot. Several pupils of the school flew for various periods of time.

M. Guillaux, having received a commission to fly at Pont-Lévêque, left Issy les Moulineaux on a Clement Bayard monoplane (60-h.p. Clerget engine) early in the morning of March 22nd. The rain forced him down for a time at Mantes, and he finally reached his destination shortly before dejeuner, having covered 93 miles in 3 hrs. 30 mins. This rate of travel gives some indication of the high wind against which he flew. In the afternoon he made two exhibition flights, in one of which he passed over Trouville and Deauville at a height of 3,000 ft. On March 25 he flew back to Paris. Before leaving Pont Lévêque he was presented with a large bouquet of flowers by a young and lovely girl.

There is some talk of holding a hydro-aeroplane and motor-boat meeting at Cherbourg in September. A prize list of 3,000 francs has already been offered.

M. Brindejonc des Moulinais, who flew to Bordeaux from Paris on March 24th, crossed the Pyrenees by air on the following day, landing at Vittoria after a hard fight in the high wind. Later he flew to Burgos; at this place his magneto gave out owing probably to the persistent rain. He intends at the first favourable opportunity to fly to Madrid. His machine is a Morane-Saulnier monoplane (50-h.p. Gnome).

On March 27th, at Mourmelon, the first monoplane constructed by the Bathiat-Sancherz firm was taken through its first trials by M. Bathiat. It flew with excellence.

M. Gilbert, flying a Morane-Saulnier monoplane (50-h.p. Le Rhone motor), left Lyons at 6.30 a.m. on March 28th and reached Villacoublay at 12.40 p.m., having covered in 3 hrs. 10 mins. a distance of 310 miles. Perhaps Colonel Seely will be interested?

At Montpelier on March 30, despite a very high wind, Charles Amans, on a Henry Farman biplane, and M. Bonnier, on a Nieuport monoplane, made flights over the surrounding country. The unfavourable weather brought them down before the arrival of the President's train.

M. Seguin has now made all preparations for his flight on a Henry Farman biplane across the Mediterranean from Marseilles to Algiers, and hopes to start on the first favourable day. The naval authorities undertake to patrol the route for him. M. Louis Pierron is to be his passenger. M. Henry Farman is himself at Marseilles.

During M. Gilbert's recent swift flight from Lyon to Paris on a Morane-Saulnier monoplane (50 h.p. Le Rhone engine), it was necessary for him to rise to a height of at least 6,500 ft. that he might cross the Cevennes. Actually his mean altitude during this stage of his flight was 14,600ft.

M. Brindejonc des Moulinais, M. Audemars, and M. Legagneux, all with Morane-Saulnier monoplanes, have made their entries for the Coupe Pommery.

M. Brindejonc des Moulinais arrived in Madrid on a Morane-Saulnier monoplane on April 1, and left for Saragossa on the following day.—W.

Germany.

The statement that Messrs. Vickers and Sons had come to an arrangement with the Lanz firm at Mannheim to construct airships of the Schuette-Lanz type in England has been denied by Messrs. Lanz, who declare that the control of all foreign patents rests with the German War Office.

The Munich to Vienna air journey which Janisch started last week took him three days, as a repair and the stormy weather greatly hampered him. The aviator was caught once in a swirl of air and again in a violent thunderstorm. His net flying time for the four hundred kilometres was three hours and forty-five minutes. Janisch, who is about twenty years of age, was accompanied by a passenger and piloted a military Otto biplane (100-h.p. Argus motor).—B.

Negotiations are pending with the German Aerial Transport Co. for the institution of a regular passenger service from Duesseldorf to Antwerp and Ghent during the summer months. A stretch of land to house the Zeppelins whilst in Ghent has been taken in consideration near the exhibition grounds.

A mounting and dismantling competition promises to be an interesting feature of the Silesian week at Breslau. All the competitiors first have to carry out a flight of a certain duration, land, and take their machines to pieces. These are conveyed by motor-car to a spot about five miles away, where the aviators have to reassemble their apparatus and then fly back to the start. The Prussian War Office has offered a prize of £500 for this most useful and unique event.

The hydro-aeroplane competition that originally was to take place in North Germany during the coming season has been postponed until 1914 at the desire of the industry. It will then most probably be held in conjunction with the German-Scandinavian circuit, and large sums of money have been placed at the disposal of the executive. The water-aeroplanes are to start from Kiel and fly to Luebeck, Travsmuende, Heiligendamm, and Rostock. However, this year will witness meetings of a like character on a more minute scale, as the date for the Lake Constance meeting has been fixed for June 29th to July 5th with the sanction of the Admiralty. Further particulars will be published in due course.—B.

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pupil named Reimer collided with a barrier and injured himself so severely that a recovery seems impossible. The machine itself was completely ruined.

Sidelights on the rush to aviation as a living are thrown by the not infrequent advertisements of the bailiffs in Berlin newspapers, who from time to time seize and announce for sale aeroplanes belonging to some unfortunate mortals, whose plans did not realise expectations. Last week three machines were advertised for sale, two absolutely new and one but slightly used. Verily, a sign of the times!—B.

Austria.

A new aviation ground is to be laid out near Maria-Lauzendorf in the surroundings of Vienna; the territory is stated to be eminently suited for the purpose.—B.

One hundred thousand kroners have been presented to the Austrian Aero Club by the Georg Schicht Co., Ltd., for an Austro-Hungarian flight that will take place most probably in the month of September. Starting from Vienna, it would lead through the empire in a number of daily stages, which would number Buda Pesth and Prague, as well as other prominent cities.—B.

Switzerland.

M. Fabre has announced his intention of flying from Lucerne over the Saint Gothard Pass to Milan on the first favourable opportunity. His machine, which he will use in this attempt, is the Hanriot monoplane (80-h.p. Gnome) flown across the Alps recently by M. Bielovucic.—W.

Italy.

With March to the available time for entering aviation motors for the military competition closed, and partly by ill-luck, partly by lack of financial help, nearly every name that one expected to see is absent from the list, which is thus reduced to the three firms F.I.A.T., S.P.A., L.U.C.T.

Chiribiri's excellent though unoriginal water-cooled engine was prevented from accomplishing the formal one-hour entry flight by the hardest of luck, the firm's two available machines of the type to which the motor could be conveniently fitted being smashed up on consecutive days, the second one only a few minutes before completing the hour. However, rules and regulations, like other nasty things, are made for our good, so one can only offer the cold comfort of sympathising.

Mirafiori, the perfecting school of the crack service flier, where such aviators as Piazza, Moizo, Falchi, Gavotti, Bolla, etc., can be seen keeping their hands in chiefly on Nieuports and Blériots, will be the scene of the Competition, its convenient position outweighing its great drawbacks. During what time they are being held aviators are officially requested not to practice the more dangerous evolutions nor fly over the public.

As to the engines, I glean that the F.I.A.T. is not very visibly different to the show motor one saw in different exhibitions some years back, that is an 8-cylinder V water-cooled. That it flew a Farman satisfactorily a few weeks ago is a fact—but why so late in appearing in the field?

The S.P.A. is a 10-cylinder on Anzani lines, and the L.U.C.T. is a rotary as you have read; so there is nothing very original about the lot, radically.

Caproni's new motor, too, seems to have been built chiefly in order to avoid dependance on Courbevoie, as to spares and so on. He has gone so well with M. Anzani's engines that he may quite likely go farther and get into difficulties.

The chief need of civilian Italy at present seems to be that of really expert pilots. Maffei, the Swiss Blériot flier, has been engaged by the Wolsit car firm, who are building Hanriot types, to bring their product into prominence, and I hear that he will have a try at the Milan-Rome flight, as one reads also of Cevasco and his Morane-Rhone, who was the first to fly to Geneva from Turin, a fast trip done a few days ago.

Considering the small material benefit which the first Italian-built machine to complete the journey in one day will get, the number of those attempting it is a testimonial to their own patriotic rivalry. No question of a cheap advert can be entertained.

John Wirtmer, who is now making the most of his failure to get through from Trieste to Rome by delighting crowds at every place on the way, had a lot of negotiating to do, ending unsuccessfully with the Triestine authorities. Flying over the frontiers is forbidden in Austria, so instead of starting from Trieste he had to leave from Venice.

Long protracted flights are getting so frequent as to be a burden to the controlling organisation. Hence we find the Italian Aero Club putting its foot down—over poor Wirtmer, too, after his other troubles—as to their obtaining military and police assistance and keeping troops in readiness for days while a spare part is being procured.

Under the new President (Major) Montù, M.P., who commanded the volunteer aviators in the war, the Club finds itself obliged to levy a tax on "ticket-holders," which, with an annual renewal, would seem unjust towards the military or purely sporting pilot. I gather that funds to provide the annual affiliation fees to F.A.I. are needed. The Aero Club's brevet is of no earthly good to a military pilot, who, at any rate, when on service can surely snap his fingers at any civilian controlling body.

The first Canard type built in Italy is announced. I have not seen it, but one who has says that the perfect finish is a wicked waste—a non-committing and cryptic phrase of the nature beloved of the inhabitants of the land. From the photos it looks not very original and a sluggish flier, but it is admittedly an experiment.

A strange fatality occurred on March 19th, as Primavesi, a well-known motor-sportsman, was returning home from Milan to Lugano on his Blériot. To the horror of his mother and other onlookers he deliberately dived down at a speed into the lake and disappeared immediately like a stone. The fragments of the propeller were found and nothing is known, nor, I presume ever will be. He may have fainted, overcome by emotion, or illness, or did his height recorder fall him? At any rate, here we see the darker side of strapping a pilot to his machine.

Mention of water reminds me that I heard it whispered (though as a fact) that Captain Moizo's Nieuport never got farther on its way to Constantinople than the harbour at Tripoli, where, in the guise of camp furniture in wooden cases, it was sunk by the upsetting of the lighter which was conveying it to a vessel returning to Turkey. One wonders what the boatmen were thinking of and where they came from!

The optimist, a spring fruit, tells us that the Forlanini dirigible will be out of its shed in a month. It's two small motors, built by Isotta Fraschini, and of only 80-h.p., are doing their bench tests in the hangar in which the machine is building.—T. S. Harvey.

U.S.A.

Twenty machines have now been entered for the Great Lakes Reliability Cruise for Hydro-aeroplanes, which is scheduled to start from Chicago for Detroit on July 8.

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M. Colliex, an engineer who was with Gabriel Voisin when the latter was constructing the original box-kite, has set himself to solve a big task, namely, to design a "flying boat," having a 300 mile radius of action, and capable of transporting a burden of 1.25 tons. The machine he has constructed—which is believed to be undergoing its trials at the present moment at Triel—weighs 4 tons, and has 400 h.p. The calculated speed is in the neighbourhood of 62 m.p.h. The wing surface is 1,400 square feet.

A New Gnome.

The Societé des Moteurs Gnome have been experimenting, very successfully, with a new motor. This engine, which is rated at 100 h.p., has developed 103 h.p. on the wind brake; it has nine cylinders.

It is understood that three of these motors will appear at Monaco this year, on a Blériot, a Deperdussin, and a Borel respectively.

A Bristol Victory.

It will be remembered that the Bristol monoplane shown at the Paris Salon and doped with Cellon was the cause of an action against the Bristol firm for infringement of certain French dope patents. The machine was detained in Paris, and the case has only recently been tried. As a result, it is reported that the Bristol Company have won their case and have been awarded 2,000 francs damage.

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The Monaco Waterplane Meeting.

BY C. G. GREY.

The Waterplane Meeting at Monaco was opened officially on April 2nd, when the sixteen machines which materialised out of the twenty-six entries were on exhibition on the Quay. The Deperdussins and the Nieuports only arrived that morning, but by doing a quick-assembling performance they were ready for exhibition in time to qualify for competition.

The thing that struck most people about all the machines was the solidity of the workmanship, which stamped them at once as weather-proof machines, a quality which was well tested, as in the process of assembling they had rain, wind, and sun in succession.

The sixteen machines with their pilots were as follows:—1 Maurice Farman (Gaubert); 1 Henry Farman (Fischer); 2 Nieuports (Weymann and Dr. Espanet); 2 Astras (Labouret and Barra); 2 Bréguets (Brégi and Moineau); 3 Deperdussins (Prévost, Janoir and Devienne-Escoffier); 1 Morane (Gilbert); 2 Borels (Daucourt and Chaumet); 1 Dartois (Gaudart); and 1 de Marçay (Bielovucic).

Most of them are fairly well-known types, except the de Marçay, which is a variant of the peculiar machine with folded wings which was illustrated in THE AEROPLANE some months ago. Undoubtedly if a machine of this type justifies itself under test it is valuable for Service purposes, for it means that it can be stowed more easily on board ship, and even at an ordinary coast defence station takes up less room in a shed.

On the 3rd the machines were put into the water for the first time, where they were moored in four ranks of four each for the official inspection, which was headed by His Excellency the Governor of Monaco, accompanied by M. Camille Blanc, the French and Italian Consuls, and a number of naval officers, including Commander Fatou, of the "Foudre," which is the mother-ship of the French Naval Air Corps.

The smartness with which even the large modern hydro-aeroplane can be handled was shown by the fact that at 2 o'clock all sixteen machines were still on land, and at 3 o'clock they were moored out in the harbour, although only one slip-way was used, and each machine was handled by its own crew, whereas, of course, on active service there would be practically an unlimited number of men available.

Most of the machines which arrived had already flown, and the Farmans and the de Marçay made trial flights at Monaco. Fischer, who was piloting the Henry Farman, had even managed to have an accident, for in alighting from a trial he broke a shock absorber which let the float come up with such a jerk that it splintered part of the main cellule of the machine. This, however, was quickly repaired.

During the day, Espanet on the Nieuport, Labouret on the Astra, Devienne on the Deperdussin, and Fischer on the Henry Farman, all flew to Cap Martin.

On the 4th it was blowing a whole gale. Fortunately, the Committee had allowed the competitors to bring their machines to land instead of keeping them moored in the port, as the rules originally intended, so that none of them was damaged, though during the night two big yachts in the harbour dragged their anchors, and were only just saved by tugs. Two machines, however, did remain on the water throughout, one of them being the de Marçay, which lay at anchor with its wings folded, and the other Prévost Deperdussin, which stood the weather equally well.

On the 5th the weather was again terribly bad, with rain, wind and a heavy sea. Unhappily, in attempting to start for the Eliminatory Trials both the Henry and Maurice Farmans were smashed up, and put out of the running. Their accidents are ascribed to the breaking of comparatively insignificant parts owing to the rules demanding such heavy loading on the machines. At the moment I have been unable to obtain more detailed information, which I hope to give later.

On the 6th the weather cleared and it was possible to get down to business again. The first machine out was Gaubert's Maurice Farman, which did the tests for starting up from the inside of the machine, and also the towing tests. By the way, it was Renaux's Maurice Farman to which reference was made yesterday as being out of the running. Altogether seven machines were out. Gaubert's M. Farman, Espanet's Nieuport, Labouret's Astra, and Weymann's Nieuport all passed both the starting-up test and the test for towing, and for navigating under their own power on the water. Brégi's Bréguet did the towing and navigating test, and Gilbert's Morane-Saulnier did the starting-up test. About 3 p.m. it rained for a while, but the tests went on all the same.

Towards evening Prévost went out on the 160 h.p. Deperdussin, which had been sitting on the water through all the bad weather, and did one of his typical flights, finishing by alighting close to the pier. He did not trouble to do any of the regular tests, presumably waiting to go through the lot in one batch, much as he did on Salisbury Plain.

It is worth noting that though the old Tellier firm have given up making aeroplanes, quite a number of the machines are fitted with Tellier floats, a fact which must please our friends of the G.A.C.

The above notes are, of course, only concerned with preliminary canters, so to speak. The real work will be done this week. Consequently next week's issue will contain a full description of those machines which do well in the tests, and of good points in the others, to which I hope to be able to add special photographs of the more important constructional details.

The real competition for the Grand Prix takes place on Saturday of this week and Monday of next.

Mr. Bell on the Short Biplanes.

Though comparatively little has been heard of Mr. Gordon Bell's flying during the past few weeks, because he has not made any attempt to advertise his big cross-country flights, he has, nevertheless, done a large amount of very excellent flying on the Short machines, of which he is now the chief pilot. It will be remembered that on the Saturday before Easter he flew a 50-h.p. biplane of the "S.38" type from Eastchurch to Hendon in such extremely bad weather that on its merits the flight deserves to rank as one of the best ever made in this country. In no wise deterred by his experiences he brought an exactly similar machine from Eastchurch to Brooklands on the following Tuesday, and thence to Farnborough, where, no doubt, it helped to go towards Colonel Seely's alleged 101. In the course of the flight he passed over Hendon without stopping. This flight was also done with a passenger, and in by no means perfect weather.

Shortly before this he had put the Short tractor hydro-biplane, which was so much admired at the Aero Show, through its trials for the Navy, and about the same period he did a large amount of test flying on the "S.38" type Shorts. One gathers from the denizens of Eastchurch that Mr. Bell is regarded by them as quite one of the best fliers in the country, which is saying a good deal, considering how good the Naval aviators are. As a general rule he is fond of flying high, but he has lately developed a very amusing trick of tracing the contour of the ground over which he is flying at a steady height of about 4 ft.

When this involves climbing a steep hill such as that behind the sheds at Eastchurch and disappearing over the top with the tail in the air only to reappear a minute or two afterwards with the elevator apparently vertically above the machine returning in the opposite direction, the effect is said to be not only humourous, but somewhat exciting, especially when the machine continues its course down the hill and passes between the Naval sheds with inches to spare on each side.

Mr. Short has already signified his intention of entering a machine for the "Daily Mail" Sea Circuit" prize, and with Mr. Bell as pilot such a machine should have little to fear from the bad weather which is said to prevail in the North.

Questions in the House.

Oral Answers, 2nd April, 1913.

Royal Flying Corps.

29, 30, 33 and 34. Mr. Joynson-Hicks asked the Secretary of State for War (1) how many of his eighty efficient machines are biplanes and how many are monoplanes, how many are more than six months old, and how many have been bought second-hand since the 1st January, 1913; (2) to which squadrons of the Royal Army Flying Corps the eighty efficient machines are attached, and how long they have been in the possession of each of such squadrons; (3) how many aeroplanes were ordered by the Army Wing of the Royal Flying Corps from English manufacturers between Michaelmas Day and Christmas Day, 1912, and whether his new and perfect machine is to be made at the Royal Aircraft Factory or elsewhere; and (4) whether, on the 24th March, 1913, the only efficient aeroplanes belonging to the Royal Flying Corps, apart from the machines in the Factory, were seventeen at Upavon, three at Lark Hill, fourteen at Farnborough, and five at Montrose?

The Secretary of State for War (Colonel Seely): These questions raise points on which I made in my speech on the introduction of Army Estimates the fullest statement that can be made at present consistently with public interests.

Mr. Joynson-Hicks: Does the public interest really prevent us from knowing the nature of the aeroplanes we have?

Colonel Seely: Certainly.

31. Mr. Joynson-Hicks asked the right. hon. Gentleman whether his attention has been called to the statement by General Henderson, Director of Military Training, at the meeting of the Aeronautical Society on the 26th ult., that the reason why orders for aeroplanes last year were spasmodic was that the money came spasmodically, and that when orders were not given it was due to lack of money; and whether such statements enunciate the views of his deparmtent.

Colonel Seely: My attention has been called to this matter. The statement made by the general officer at the meeting referred to, of which a brief report appeared in the Press, was accurate in every particular, and conflicted in no way with my public acknowledgment of the liberal way in which my demands on the Exchequer for aviation had been met by the Chancellor. There are many other things besides aeroplanes to be provided out of aviation funds, and it was necessary for me personally to decide from time to time in what proportion sums should be allotted to the various services.

Mr. Joynson-Hicks: Do I gather from that that the spasmodic orders were owing to lack of funds?

Colonel Seely: No, sir, certainly not. If my hon. friend will read my reply he will see they were owing to decisions I had to give myself as to the directions in which we should spend the money available for the various aviation services.

Aerial Warfare.

58. Mr. Joynson-Hicks asked the Prime Minister whether his attention has been directed to the German Army and Navy Estimates in reference to their proposed increase in the preparations for aerial warfare; and, as our existing Estimates were framed without knowledge of these preparations, what steps he proposed to take to place Great Britain in a position to adequately defend her shores against possible attack.

The Prime Minister: All new facts arising after the presentation of the Estimates of the year which may affect the naval or military position are considered by the departments concerned, and any further action which is found necessary can and will be taken without delay.

Mr. Joynson-Hicks: Having regard to the fact that the First Lord of the Admiralty stated the other day that he had not known of the German Estimates when these were produced, could not the Prime Minister give a day to discuss the whole question of aviation?

The Prime Minister: No; it has been very fully discussed on the Army and Navy Estimates, and there will be many other opportunities on the Estimates.

The Royal Aero Club.

At the committee meeting on the 1st instant, Mr. J. T. C. Moore-Brabazon proposed the re-election of Sir Charles Rose, Bart., M.P., as chairman of the Club for the ensuing year. The motion was seconded by Major J. D. B. Fulton, and carried unanimously. Sir Charles Rose explained that, owing to his many other engagements, he feared he would not be able to give the necessary time that the position of chairman demanded. He much regretted, therefore, that he did not see his way to accept re-election. The question of the election of chairman was adjourned till the next meeting.

On the motion of Mr. J. T. C. Moore-Brabazon, seconded by Major J. D. B. Fulton, the following stewards of the Club were re-elected for the current year: The Rt. Hon. the Earl of Lonsdale; Admiral Rt. Hon. Sir Edward H. Seymour, P.C., G.C.B., O.M., G.C.V.O.; Sir Charles Henry, Bart., M.P.; Sir Charles D. Rose, Bart., M.P.; Hon. Arthur Stanley, M.P.

The following aviators' certificates were granted:—444. Sergt. J. Kemper (Maurice Farman biplane, Central Flying School, Upavon). 445. 1st Class Air Mechanic J. C. McNamara (Maurice Farman biplane, Central Flying School, Upavon). 446. Leading Seaman Philip Ephraim Bateman, R.N. (Maurice Farman biplane, Central Flying School, Upavon). 447. Lieut. Raymond Fitzmaurice, R.N. (Short biplane, Central Flying School, Upavon). 448. Lieut. W. F. Robertson Dobie (Bristol biplane, Bristol School, Brooklands). 449. Lieut. Neville Usborne, R.F.C. (Caudron biplane, Ewen School, Hendon). 450. Lieut. Guy Blatherwick, R.N. (Bristol biplane, Bristol School, Brooklands). 451. Lieut. Wilfrid Picton-Warlow (Bristol biplane, Bristol School, Brooklands). 452. Arthur B. Ashford Thomson (Bristol biplane, Eastbourne Aviation School, Eastbourne).

The Aero Club de France asked the Club to sanction the issuing of certificates to Major E. M. Maitland and Mr. Charles Reynolds.

The aeronaut's certificate was granted to: No. 30, Lieut. F. L. M. Boothby, R.N.

The airship pilot's certificate was granted to: No. 16, Lieut. F. L. M. Boothby, R.N.

Pilots of All Nations.

The F.A.I. has just issued the official list of certificates granted up to December 31st, 1912, to pilots of aeroplanes, airships, and balloons by the different countries forming the Federation. The following figures have been tabulated from the list:—

	(Aeroplanes). Aviators' Certificates.	(Balloons). Aeronauts' Certificates.	(Airships). Airship Pilots' Certificates.
Argentine Republic	15	13	—
Austria	84	86	24
Belgium	58	55	2
Denmark	8	7	—
Egypt	1	—	—
France	966	264	23
Germany	335	909	22
Great Britain	576	32	11
Holland	26	17	—
Hungary	7	—	—
Italy	186	67	13
Norway	5	5	—
Russia	162	4	1
Spain	15	30	2
Sweden	10	17	—
Switzerland	27	30	—
United States	193	42	3

These figures are very misleading unless considered carefully. For instance, it appears strange that Austria should have the most airship pilots. This is because her two or three really useful airships are worked very hard, because the dirigible appeals to the high-born Austrian officer more than

does the dirtier aeroplane, and because on the Central European Plateau high winds are less frequent, and comparatively slow dirigibles can be used very often. The number of French aviators' certificates includes foreigners of many nations, but it rather understates the number of actual fliers, because so many Frenchmen fly for a long time without taking their certificates, only doing so when actually about to take part in competition.

The German number is very much understated, and so is the Russian, because in both countries many pilots of both the army and navy never take their certificates at all, as it is wished to keep the actual numbers unknown. This also applies to the airship pilots. A better estimate can be obtained by liking a line from the balloon pilots, in which case there is no military reason for hiding the number. They have three times as many qualified balloonists as France and nearly thirty times as many as England.

How M. Chevillard Does It.

The sensation of the last few weeks among aviators has certainly been the flying of M. Chevillard on the 80-h.p. Henry Farmans at Hendon, so it may be interesting to know how he does the particular trick for which he is most famous. The performance in question consists in banking the machine suddenly to the left, standing it on its nose, doing a spiral dive for anything over a hundred feet, and flattening out between



Chevillard.

50 and 100 ft from the ground, just when everybody has made up their minds that he is going to hit the earth vertically. The method of doing this performance is not given in order to incite pilots to attempt suicide, but merely so that any who insist on trying to imitate M. Chevillard may, at any rate, have a notion of how to go about it.

According to M. Chevillard the first thing he does is to throw the control lever to the left, thus banking the machine upon the right, at the same time pushing the lever forward to get the nose of the machine down. Immediately the machine begins to dive he brings the ailerons back level by centralising the levers, gives full rudder to the left with the left foot, thus increasing the bank, and immediately afterwards or almost simultaneously he pulls the lever back as far as it will go, thus pulling the elevator up. The effect of this is that owing to the steep bank the rudder acts as an elevator and keeps the tail up, while the elevator acts as a rudder and keeps the machine turning in a small circle, so throwing it out against the air by its own centrifugal force.

At the moment of beginning the manœuvre M. Chevillard switches off, apparently with the idea of removing most of the gyroscopic force of the engine, and so making the machine quicker in answering its controls. As soon as it starts on the spiral he switches on again, so as to have the engine ready to steady the machine in flattening out.

The precise moment during the performance at which the different manœuvres are executed can, of course, only be learnt by practice, and the probability is that only a certain proportion of pilots would survive to the stage of finding the exact moment. Also I think it likely that the performance would be impossible on any machine which had not a very large tail and elevator situated on a level with the top plane, because it is highly probable that in the ordinary type of tractor biplane when the machine really began to dive at a speed of about 120 miles an hour, as it does, the streamlines from the fuselage and the deflection of air by the upper plane would so upset the controls that they would refuse to act, much as the late Lieut. Parke's did in his famous dive on Salisbury plain, when he practically executed the same manœuvre unintentionally.

Mr. Hamel's Luck Again.

On Wednesday, April 2nd, at 8.10 a.m., Mr. Hamel set out from Dover in an 80-h.p. tandem Blériot, loaded with Mr. Dupree, 5 hours' supply of fuel, and an apple to eat over Malines, where he had posted some mechanics. While crossing the Channel the machine was tossed about a good deal, but, to Mr. Hamel's surprise, on reaching the French coast, the air, instead of becoming more disturbed, became much calmer, until Dunkerque was passed, when small clouds were encountered. At Ghent the new exhibition buildings made an extensive landmark. Mr. Hamel described the canalised country over which he passed as looking like a geometrical problem.

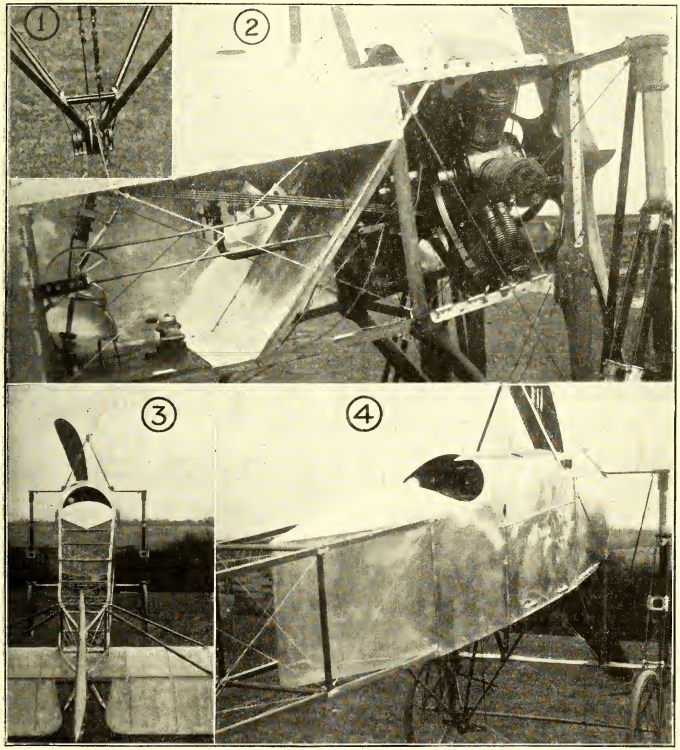
Over Malines, just as Mr. Hamel was preparing to eat his apple according to schedule, an inlet valve broke, causing him to postpone the ceremony and to bring down the monoplane in the nearest practicable field, a matter of some difficulty, as the whole neighbourhood was waterlogged. The landing, however, was made without mishap and, by a curious coincidence, in the very field which Mr. Hamel's mechanics had chosen, and were waiting with spy-glasses to watch him pass over. The flight, of approximately 140 miles, was covered in 2 hours and 10 minutes.

Before starting from Dover Mr. Hamel rang up the coastguard and asked them to keep an eye upon him while he was over the Channel; they followed his flight through their telescopes, and as it turned out subsequently, were able to estimate correctly the time and place at which he entered France. Mr. Hamel was flying at a height of about 2,300 ft.

The authorities at Dover, unaware that Mr. Hamel had received his permission to fly over the "prohibited area," informed the Home Office of the flight within half-an-hour of his start; which shows that the new regulations are working well.

This is Mr. Hamel's tenth Channel flight, and by no means his first with a passenger.

The Rejuvenation of Mr. Hewitt's Bleriot.

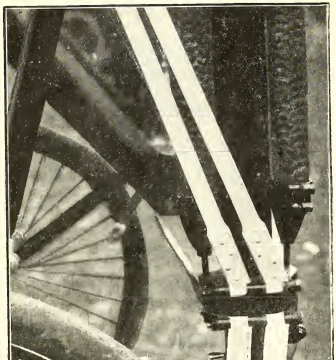


(1) The reinforced lower cabane. (2) The engine and cockpit with casing removed. (3) Tail view. (4) General view of new body work.

During the past five months Mr. Vivian Hewitt has kept two mechanics busy in his workshop at Foryd reconstructing the old pattern Blériot on which he flew the Irish Channel last year, and on which he did so much good flying in North Wales. The only part of the original machine now left is the landing chassis, the engine, and the four fuselage longitudinals. The whole machine weighs but 35 lbs. more than it did before, and it seems probable that the streamlining of the cockpit will make up for the extra weight, the reduced head-resistance giving extra speed and consequently greater lift.

The accompanying description and photographs are of interest, as showing that brains and money are being expended on aviation in this country apart from the good work that is being done by the big manufacturers.

The new wings weigh 10 lbs. each more than the original Blériot's wings, and are fitted with a wooden leading edge instead of the usual sheet of aluminium bent round. The ribs are all slightly thicker and the spars are designed to give even



The new stay ribbons, showing widening at foot to give added strength.

greater strength. The front spar and rear spar are fitted with four plates instead of two each. It is impossible for air to enter the wing where the plates come through the fabric as small pieces of wood are fastened to the spars inside the wings and the fabric is nailed to these. A piece of cane runs along each rib over the fabric instead of only as far as the radius of the propeller.

The "cabane" is slightly thicker gauge steel tube and there is no piece of wood let in at the top. Instead, the whole is brazed together, having previously been cut out of steel and carefully fitted. There are four steel warping wheels for the top bracing wires to work on, and the bolt for the four front wires is half as thick again as in the original machine. The cabane is stayed across near the bottom to take any strain off the fuselage. It is braced from the top to the fuselage by eight wires instead of four.

The steel ribbons for the underside of the wings are belled out at the ends where the clips are riveted to them, thus obtaining uniform strength throughout, and there are four ribbons to each wing.

The bottom "planche" has a strong steel ribbon suitably drilled out for lightness running from one end to the other and connected to the ribbon brackets. The planche is of hickory.

The bottom "cabane," which takes the warping gear, is braced together by cross tubes. There are also two steel ribbons from one side to the other of the fuselage where the warping cabane bolts on, thus taking up the tendency to push the fuselage members out when climbing. The warping bracket which was originally aluminium is now steel, machined out of the solid and brazed into the tubes. There are four warping wires instead of two to the wings, and these pass round steel wheels.

The wires from the "cloche" to the warping arm are double the former thickness.

The "cloche" itself has four steel arms running from the top to the bottom of the bell to which the control wires are attached so that even should they, i.e., the control wires, break from the aluminium the steel arms still hold them. As the arms are all cut out of a single piece of sheet steel and the whole slipped over the "cloche" it is impossible for these to come adrift.

The fuselage has had light steel plates fitted between it and the distance pieces, thereby making the cross bracing less liable to give and also preventing the distance pieces from splitting at the bottom.

The floor has had four pieces of wood screwed on the underneath side, making it less liable to split.

The elevating tail has stronger tubes to stay it to the fuselage and the fuselage is stayed from one side to the other where these are bolted on, thus taking the strain off the cross bracing to a certain extent.

The body is composed of aluminium left bright and finished off with copper rivets. It tapers off behind the seat to a streamline shape. Doors are fitted on each side of it for cleaning the tanks, etc., and the shield over the engine leads into it. The photograph explains this. Everything is made for accessibility and it is interesting to note that the doors and engine shields can be taken off in two minutes.

A release clip is fastened to the skid and stayed to the fuselage.

The ribbons are painted white and also all the wires. The rest of the machine is painted a deep fast red which shows up very well with the aluminium.

Round the tube that the front spar of the wing fits into extra steel brackets have been fitted, thus strengthening it up. All wires were boiled in soda water in case of rust and before being painted were coated with two coats of red lead.

In Mr. Hewitt's workshop shed at Rhyl there is a power-driven lathe, a shaper drill, and a grindstone, besides a big equipment of tools. The works do their own nickel-plating, re-magnetise their magnetos, and make their own electric light. Three mechanics are generally employed. Altogether Mr. Hewitt's is one of the most adequately equipped workshops in the country.

Our Non-Commissioned Pilots.

Non-commissioned officers of the R.F.C. continue to take certificates regularly, and in excellent style. Sergt. Stafford and Sergt. Street obtained their brevets on March 7th, on a Maurice Farman biplane. Sergt. Vagg, another new pilot, must be blessed with a nervous system as sound as his physical constitution, for he passed his tests very creditably in a Short biplane on March 12th, only five months after a considerable motor smash, in which he broke an arm, and otherwise hurt and bruised himself. Sergt. Kemper, Air Mechanic McNamara, and Leading Seaman Bateman are also recent successes of the Central Flying School, and have all shown themselves very capable fliers.

An Aviation Pocket Book.

Messrs. Crosley, Lockwood and Son have recently published a new edition for 1913 of "The Aviation Pocket Book," by R. Borlase Mathews, A.M.I.C.E., M.I.E.E. The book contains a number of tables which are of much use to those studying the construction of aeroplanes, such as the head resistance of bodies of particular shapes, the travel of the centre of pressure on certain aerofoils, the values of skin friction, strength and weight of materials, moduli of elasticity, loadings of beams, and so forth. The general theory of aeroplanes is well and simply explained. The worst one can say of the book is that a good deal of information which is now obsolete might well be omitted, as, for example, particulars about rubberised fabric, which is never used on a modern aeroplane. Also, the dimensioned sketches of various machines might well have been brought up to date or have been left out. For instance, the Blackburn, Blériot, Deperdussin, Bristol monoplane and biplane, Borel, Avro, and Short machines are all shown in obsolete types which may be interesting historically, but are not as informative as would be the late 1912 patterns of the same machine. The compilation of the figures given indicates considerable industry on Mr. Mathews's part, and the book is well worth the 3s. 6d. asked for it.

Notes on Waterplanes.

BY E. W. WAKEFIELD (Lakes Flying Co., Windermere).

Every boy worth his salt builds castles in the air. But sometimes his wings (opportunities) have not enough area to carry the load. And sometimes his engine (force of character) is a bit short of power. So grey hairs come, and the castles fade. The castle I built was to fly, and lo! it materialised after five-and-thirty years, in spite of the grey hairs.

It is, however, not yet four years since I decided to concentrate on waterplanes. At that date waterplanes were unheard of, and water flying was ridiculed, and judged impossible, just as a year or two before the idea of any machine really flying was laughed out of court.

Waterplanes! What are they? Why are they called that? Is it not a name invented by the "Daily Mail"? Very likely it is, but it is a good English name all the same, and, after all, what ought they to be called? Hydro-aeroplanes, or Aerohydroplanes? Surely too cumbersome altogether. Then Waterflyers has been suggested but not adopted. I thought at one time that Water-birds might be a good name, but one of Canon Rawnsley's friends said that in that case he would call them "Waterfoul," spelled thus instead of with a "w"—and that we should not like! Others who are not quite of my way of thinking have kindly suggested several names (such as Vile Buzzards, Stinking Kites, Death Toys, etc.).

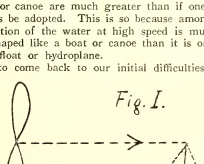
In some ways "Clouds" might not be a bad name. Observe, most of the characteristics of an efficient waterplane are to be found in clouds. For instance, both always rise from water; fly easily through the air at very varied speeds, and descend either on land or water indifferently. But poet Rawnsley says if I call them Clouds he and his friends will call them Fogs! And that would not do; so we are back again at Waterplanes, until some more appropriate or popular appellation has been invented or suggested.

Why was the problem of rising from water not solved until long after that of rising and flying from land? I think because it presented more difficulties though fewer dangers, and most men prefer dangers to difficulties. (A good illustration of this maxim is the instance of "Tommy," who greatly prefers fighting to starving and marching.)

Some Difficulties.

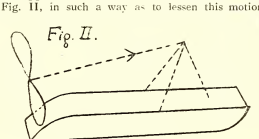
Let us see what these difficulties were, and how far, or how many of them have been met, and to what extent. It seems easy enough to mount a flying machine on a boat, or a canoe, and so it was and is. Yet such a combination has only very recently been persuaded to fly, and then only by those who had availed themselves of all the information and experience obtainable from machines that had been flying off water for a couple of years or more. In fact, the difficulties of using a boat or canoe are much greater than if one of the systems of floats be adopted. This is so because among other reasons the friction of the water at high speed is much greater on a body shaped like a boat or canoe than it is on a body shaped like a float or hydroplane.

But to come back to our initial difficulties. If a boat or



canoe produces, as it, in fact, did produce, too much friction at high speed and too little stability, what was the objection to using an ordinary racing hydroplane? Many people tried this, but so far as I know, no one succeeded. The racing hydroplane is designed to be propelled from behind and below by a screw revolving in the water; the waterplane, on the contrary, is to be propelled or drawn along by a screw revolving in the air. Now if you look for a moment at Fig. 1 you will see that the aerial propeller is pushing from left to right, and the water friction from right to left at opposite ends of what is practically a lever, thus producing a turning moment which rapidly drives the bow of the hydroplane under and into the water instead of out of the water and into the air.

It was suggested that the axis of thrust should be lowered, as in Fig. II, in such a way as to lessen this motion, and



it is very likely that anyone desiring to propel a racing hydroplane with an air propeller might successfully adopt such a system. But in the case of a waterplane, just consider what happens: The angle of incidence of the wings in the air and, consequently, the centre of pressure, is completely out of the flying position, and even if it were possible for such a combination to leave the water and take the air, it would certainly be impossible to remain long in the lighter element.

How, then, is this difficulty in fact overcome? By making the float or floats with inclined-plane bottoms, so that as the speed is increased through the water the pressure of the water on the inclined plane tends to raise the nose of the float, and thus counteract the tendency of the propeller to thrust the nose down. In this way no doubt a considerable amount of engine power is wasted, and that is why it was found at first, and still is found in the case of most waterplanes, to be a more difficult business to get up the necessary flying speed on water than on land. The minimum flying speed for most machines is in the neighbourhood of 35 miles per hour, and many machines cannot be flown at less than 45 or 50 miles per hour. As this speed is in excess of any racing hydroplanes, even when unencumbered by large and more or less clumsy machines mounted on them, it will be obvious that some contrivance more efficient than a racing hydroplane is a necessity.

The Search for Stability.

Now let us see how this contrivance has been arrived at. It was necessary to obtain at least a certain amount of stability on the water; because, although it is true that the early experimenters were quite accustomed to spending almost as much of their time in the water as on their machines, and seemed to thrive more like amphibians than men, yet these frequent immersions proved highly inconvenient to their experimental structures, and often resulted in twisted frameworks, in splintered propellers, and even in damaged engines.

Stability can be obtained on land by four wheels, or by three wheels set in the shape of a triangle, either two in front and one behind, or vice versa, or even by two wheels in front with a skid behind, but not so far as I know, with less than three points of support. Arguing from this, the earliest experimenter with waterplanes, M. Henri Fabre, tried for a long time with three floats, because he felt so sure that stability on water could not be obtained with a less number. And there are still many people who think that M. Henri Fabre will ultimately prove to be right, and that some arrangement of three floats will be the final solution of the, as yet, only half-solved problem of waterplane stability.

Another very important point which arose from the early

experiments was the importance of having the underside of the float an inclined plane, and not any modification of the underside of a canoe or boat. The object of this was in order that the floats might rise out of the water and not rest in the water like a boat, for unless the floats be constructed to rise well out of the water before any great speed is obtained, it is almost impossible to overcome the enormous surface friction which increases, as is well known, much more rapidly than the speed, in the case of a body moving through water. But in spite of the valuable results obtained by M. Fabre, he, like many early experimenters, achieved but moderate success, and it was reserved for the American, Mr. Glenn Curtiss, to show that with a single float constructed on certain lines so as to lessen resistance, it was not only possible to rise from the water, but also to alight on it with a reasonable amount of safety; for, if the truth must be told, while the Fabre system had shown itself able to leave the water, it had not been equally successful in alighting without damage.

Among the important results derived from Mr. Glenn Curtiss' experiments may be mentioned in addition to the possibility of using a single float, the importance of retaining the Fabre float bottom together with parallel sides, and mounting the float under the aeroplane in such a way that the greater part of the buoyancy was forrard the centre of gravity, and only just sufficient buoyancy left at the stern of the float to prevent the risk of a tail dive (see Fig. 111). By

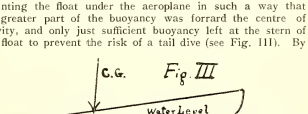


Fig. III

this means a considerable speed could be attained in the water before the excess of forrard buoyancy was overcome by the pressure of the propeller, and when once speed has been got up the inclined plane comes into action and the risk of a nose dive is greatly lessened.

Single Float Stability.

But you will ask how was it that Curtiss obtained the necessary stability with only one float? Well, as to the fore and aft stability, the problem was solved by making the float some 14ft. long, but seeing that it was only about 2ft. wide there was obviously very litte lateral stability, that is until speed had been got up on the water, so that the wings themselves assisted to maintain it. To help in achieving this, and to lessen the risk of accidents, Curtiss attached a curved spring-board to the underside of the end of each of his lower wings This contrivance worked fairly well when the machine got going, but there were great difficulties when it was stationary, or moving quite slowly, and not a few upsets in consequence.

More Troubles.

Now at this stage of development the drawbacks of the waterplane were very obvious and may be summarised as follows:—First, in the matter of lateral stability there was much to be desired, because the unlucky pilot had either to adopt the Curtiss system, in which case if he came to rest on the water he was pretty sure to upset; or the Fabre system, in which case he was able to get off, but the difficulty was to alight, safely on the water without smashing up. The question of longitudinal stability which had presented difficulties, had been more or less surmounted by this time. There were obviously two or three alternative ways of trying to meet the reasonable requirements—we will not say of the pilot, who ought not to mind the water, but let us say of his lady passenger, who, however good a swimmer she might be, had perhaps no special desire to immerse her frock, and risk the loss of her pet ornaments.

Among the possible alternatives were the following:—First, to add auxiliary floats of small size, but of sufficiency buoyancy, which would not come into action unless, or until, they were needed. This plan has been adopted by many experimenters and constructors in all sorts of different arrangements. Secondly, to see what could be done with two floats, instead of either one, or three. And, thirdly, greatly to widen the float, say from 2ft. to 6ft. or 7ft., and trust to get lateral stability in that way. Each of these methods has its advantages and also its drawbacks. For instance, if small auxiliary floats be added as balancers under the extremities of the lower wings, though they will frequently save an upset when the machine is stationary or travelling at a slow speed, there is also the risk that just as the machine is rising or alighting it may meet with a slight gust and dip one of its balancers into water which it is passing at a rate of say 40 miles an hour. The impact of the small auxiliary float or balancer on the water at this speed will not only break the balancer, but probably wrench off a wing, and upset the whole machine.

The Two-Float System.

In the case of the two floats, the difficulty of lateral stability is more successfully overcome, but even here there are drawbacks. The friction in the water is greatly increased, and consequently if either of the two floats leaves the water, or takes the water, sooner than the other, the machine is spun round in a dangerous and undignified style; and it is to be noticed that this may happen without any fault on the part of the pilot; because, however level he may keep his machine, the existence of even a small wave under one of the floats and not under the other may result in disaster.

Then there is the third method of widening the float. This avoids some of the difficulties and dangers of the two first methods, but it does not attain as good a degree of lateral stability as might be desired, and it also subjects the float to undue strain from the blows of the water on such a large surface.

It is noticeable that in spite of the drawbacks of the second method most of the successful waterplanes are now made with two parallel floats, often aided by a small auxiliary tail float. These machines prove quite reasonably stable, nor do they seem to subject their pilots and passengers to any undue risk. Also, incidentally, it is felt by many people that two feet are more natural than one, although I don't think this last is a very strong argument; and it always seems to me that the advocates of the two parallel floats are in this dilemma: If they place them far enough apart to secure lateral stability, the risks in rising, and especially in alighting are quite considerable; while if they place them near enough together to minimise these risks, they lose much of their lateral stability.

Perhaps it may be found possible to widen the single float considerably, at the same time introducing some method of breaking up its large flat surface, so as to lessen the force of the impact of the water, and in this way achieve a combination of the advantages of the one-float and the two-float systems. At any rate, I throw out this suggestion for what it is worth. We shall see in a year or two, perhaps sooner.

A Reminder.

Readers of The Aeroplane should not forget that the races for the Grand Prix de Monaco and Schneider Cup do not take place till Saturday and Monday next, so that those who wish to see the very latest developments in hydro-aeroplanes in competition have still time to reach Monaco for the purpose. The quickest and most convenient route is by the South Eastern and Chatham Railway via Calais or Boulogne and the Chemin de fer du Nord to Paris, and thence by the P.L.M. to Monaco. The Bristol Hotel at Monaco is the headquarters of everyone concerned with the meeting, and the accommodation there is on the same high level of excellence as that of the various other Bristol Hotels in France, while the prices are exceedingly moderate. The meeting is certainly the most important that has yet taken place from a British point of view, because of the great part that hydro-aeroplanes will play in our future national defence.

There are so few opportunities in modern life of acquiring useful and practical information whilst spending a holiday in ideal surroundings.

Exhibitions at Hendon.

On Thursday Mr. Brock had the afternoon to himself; he took up a 35 h.p. Deperdussin in an untrustworthy wind, which touched 45 m.p.h. at times, and received some rough treatment at the lower levels. Flying for thirty-five minutes, sometimes brought almost to a standstill by the wind, he reached a height of 2,350 ft., and then descended in a steep and beautifully judged glide. The performance was quite out of the ordinary, and was thoroughly appreciated by the crowd, who gave the aviator something of an ovation on his return to the sheds. To reach such a height in such a wind on this little, though good, machine, puts Mr. Brock definitely among the first-class pilots.

On Saturday the wind was blowing from the north-east worse than ever, even the anemometer showing it to be from 18 to 43 miles an hour. No one expected any flying, so there was much surprise when just before 4 p.m. Mr. Brock turned out on the little 35 h.p. Deperdussin. The machine was practically off the ground before he started, and he was up at over 500 ft. before he had crossed the aerodrome; he made one turn over Hendon, then shot back beyond the Welsh Harp in a minute or so, turned again, and came back head to wind at times standing still, and at others making about four or five miles an hour, taking quite ten minutes to cross the aerodrome. He fought his way out the other side, where, at a height of 1,000 feet or so, he turned again and came tearing back at 90 miles an hour. In two or three minutes he vanished from sight, and we were all heartily glad to hear by 'phone that he had arrived safely at Brooklands at 4.23 p.m. his flying time being about 12 to 15 minutes.

That is certainly the biggest wind so small a machine has ever been out in, and as an example of clever piloting, the performance was priceless. But it only showed the difference between a pilot and an airman, for the airman, like the seaman, knows when it is wiser to stop ashore. There might be occasions in war, if all bigger machines were broken, when such a flight would be of high value, and to that extent it was useful, in that it showed what could be done; but to take such risks as Mr. Brock took on that little machine without any other incentive than the desire to distinguish himself was about as wise as going over Niagara Falls in a barrel. As it happened it came out all right, and Mr. Brock gains much kudos, but the odds were very much in favour of interested persons being able to attribute another death to the inherent danger of monoplanes—it is generally the machine that is blamed, and hardly ever the pilot—and it was not a fair test for a machine that has done much school work, and has such a small engine, good as is the little Anzani.

Soon after Mr. Brock dropped Mr. Hamel took Miss Trehawke-Davies up on the 70-h.p. tandem Blériot. They had a terrible pitching about, even at their maximum height of 4,500 feet, where they were above the clouds. Lower down they got fierce gusts off the ground, and above 1,000 feet they were thrown about by cloud currents. Nevertheless Mr. Hamel did a couple of fine spirals on the way down. At 4,000 feet or so the machine made practically no headway, which gives some idea of the wind-sweep aloft.

Among the interested spectators were Sir Walter Buchanan and Colonel Allen, two prominent members of the Defence Committee of New Zealand. A new 80-h.p. tandem Blériot has recently been presented to New Zealand by certain members of the International Correspondence Schools, and these two gentlemen were busy gathering information on aviation in general. Both agree that for their country water-planes are particularly suited, on account of the physical peculiarities of the land, and because the defences, if they are ever needed, will be almost entirely concerned with the coast. It seems probable that very considerable attention will be given to such craft in New Zealand ere long.

On Sunday, though the wind speed was not so high the air was more treacherous, and the gusts were more sudden. The only flying was done by Mr. Hamel, who went up twice on his own 50-h.p. Blériot, and had a terrible shaking up. He started at the inner end of the causeway of sleepers which has been laid over the mud at the outlet from the sheds to the flying ground, and the machine was well off the surface before he reached the end of the causeway. He intended to get above the clouds and make a compass course to Brooklands, but the down-currents under the clouds prevented him from reaching any great height, so he came down after about ten minutes. The second flight was even worse than the first.

Quite a goodly crowd was present, among the visitors being Sir Charles Ross, the inventor of the Ross rifle, one of the leading authorities on ballistics, who was much interested in the question of the streamline slopes of fast aeroplanes, his studies of rifle bullets bearing considerably on the same problems.

Mr. Ferguson's Hard Luck.

Mr. Harry Ferguson writes from Belfast:—"The poor old 'bus has been done in once more.

"On Sunday afternoon last Mr. Lywood made some straights in a small wind, and in the evening Mr. Williams went out. Previous to this Mr. Williams had made a number of straights and was getting on splendidly. After making about a dozen of straights of a quarter of a mile and landing most beautifully every time, his accident occurred. He had just landed for the last time prior to bringing the machine in to the shed and he certainly was very tired, which may in part account for the accident; he landed at a very high speed and probably dropped his tail before the machine had slowed down sufficiently; anyway, he shot 60 ft. into the air almost vertically, with his engine all out; then the right wing went down and the tail up, and he dived straight into the ground, one wing and the nose hitting first. The shock broke the belt around his chest, and but for this and the helmet he would have been a dead man; as it is, he will probably be quite fit for work again next week."

Marcel Desoutter's Illness.

Everyone will sympathise very deeply with poor little Marcel Desoutter in the suffering he has borne so pluckily during the past fortnight and more.

For a week after his accident on Easter Sunday all went as well as could be expected, though the doctors were anxious about his leg, which was badly mauled as well as being broken. It was set as well as possible, and he was taken to King's College Hospital, where he progressed favourably till the beginning of last week. On the Tuesday symptoms of tetanus set in, and on Wednesday the surgeons decided to amputate his leg at the knee. Until Saturday they despaired of his life, as he passed through spasm after spasm, enduring the greatest agony, though between the attacks he was as brave and cheerful as any man could be. Apparently he was chiefly concerned as to whether he would be able to fly with one leg.

On Sunday morning he had a very bad attack, but after it he was much better than on the previous day, and the doctors began to hope that he might pull through, thanks to his wonderful constitution, and the clean, steady life he has lived. Later reports show continued improvement.

Mr. Flanders' Condition.

Mr. Howard Flanders still lies in a critical condition at Walton Hospital. He is suffering from a fractured skull, the fracture extending to the base. There is hope that by the time this appears he may be out of immediate danger, and all will wish him an early and complete recovery.

Windermere.

There are three machines in course of construction on Windermere, all of which should be seen flying soon. (1) Major Brocklehurst's hydromonoplane, with bat's wings; (2) Mr. Gneospelius has a very smart and serviceable-looking little Blériot-type hydromonoplane almost ready to be tried. He retired from the Lakes Flying Company some time ago; (3) and Mr. Trotter is getting well on with a large and powerful machine on the newest and most approved lines.

"Modern Developments of Aeroplane Theory."

At the forthcoming meeting of the Junior Institution of Engineers, to be held on April 23rd, a paper thus entitled will be read by Mr. Archibald Low, M.A., As.I.Ae.S, etc., chief designer, aviation department, Messrs. Vickers, Ltd., followed by a discussion. Full particulars of the meeting can be obtained from the Secretary of the Institution, at 39, Victoria Street, S.W.

A Zeppelin Visits France.

In the early part of the day on April 3rd there was seen cruising over the fortified posts of Vauvilliers, Remiremont, Vesoul, and Epinal an airship. That it was a German airship was obvious, as its form was that of a Zeppelin. France is not without previous experience of this type of espionage. On this occasion the sequel was an exception to the general rule. At 1.45 p.m. the 17th Chasseurs were carrying out simple manœuvres on the Champ de Mars, outside Lunéville, when, to the intense amazement of all, the long grey body of a Zeppelin was seen in the sky, and was obviously about to land. In response to signals from the airship crew the French soldiers, by no means unaccustomed to the work, seized the ropes hanging from the great vessel and brought it gently to rest on the ground.

It proved to be the Z.4 undergoing acceptance trials for the German army. Yet, though ostensibly the property of a commercial body, it was piloted by Captain-pilot Glund, assisted by Captain Georges of the Berlin Aerostation Section, Lieutenant Jacobi Felix of the Metz Section, and Lieutenant Brandeis of the Berlin Section. All these officers, fortunately for themselves, were in uniform. From the account of Captain Georges, it appears that the ship left Friedrichshavn at 6 a.m. that morning. After flying for several hours in heavy mists, constantly losing gas, they found themselves over France. As an act of courtesy, he says, they landed that they might explain the regrettable circumstances and prove that espionage was no part of their plans. The officers were taken under armed guard to Lunéville, where they were entertained by the maire. The crew of mechanics remained on board equally under guard.

The ship is of 140 metres in length and of 40,000 cubic metres capacity. Two nacelles are fitted. The motive power is supplied by three Maybach engines of 150 h.p. each. A gun-platform was laid out on the top of the dirigible, but no gun was fitted in this case.

The immediate result of this landing was the arrival from all parts of France of aeronautical officers who desired to acquire such information relative to Zeppelin construction as is possible. On April 4th General Hirschauer, Inspector-General of Aeronautics, arrived at Lunéville shortly after 9 a.m. and made an exhaustive examination of the Zeppelin. He also interrogated the German officers, and, apparently satisfied with their explanations, allowed them to return by train to Germany.

The excitement in France was intense. Excursion trains were run from Paris crowded with people eager to view the German "mystery." The aeronautical experts of at least two nations started for the scene of action.

The correct explanation of the incident seems to be that owing to some serious breakage in the machine the captain was compelled to land, and, as he still had the ship under control, he chose the military ground rather than face the hostility of the peasantry in the open country.

After consideration, the French Government permitted the Z.4 to leave French soil at 12.15 p.m. on April 4th.—W.

A Patriotic Lecture.

In accordance with the League's policy of arousing public interest in aeronautics, Colonel H. S. Massy, C.B., will give a lecture for the Women's Aerial League on Wednesday, April 30th, at 8.30, at the Kensington Town Hall. The lecture will deal with aviation from the national point of view, and will be profusely illustrated with the most up-to-date slides. Mr. Alan Burgoyne, M.P., will take the chair. Tickets may be had from the Hon. Secretary, Denison House, Vauxhall Bridge Road.

A Useful Map.

The "Geographia" Designing and Publishing Co., Ltd., have produced a new motor-map of London and its environs, the most useful and attractive features about which are the clear definition of the exits and the ease with which cross-routes may be picked out, avoiding the traffic. This map is called the "Indispensable," and is issued at 1s. on paper and 2s. 6d. mounted and dissected.



Sergeant Hunter, Royal Flying Corps, a promising military aviator whose early experiences in France and at Brooklands will be remembered.

Sea-Proof Metal.

For a good many years scientists have been seeking for a reliable aluminium alloy. Some of them have obtained metals of low specific gravity and considerable tensile strength, but in almost every case these metals have fatigued easily, and have generally been particularly easily deteriorated by the action of sea-water. It will be remembered that at the Aero Show a very interesting exhibit was made by the Navaltum Company, and, so far as the writer has been able to discover, tests which have been carried out for a prolonged period show that Navaltum metal has got right away from the defects of other aluminium alloys while retaining a specific gravity which makes it even lighter in certain strengths than pure aluminium, and it is undoubtedly quite impervious to the action of sea-water. In view of the enormous developments which are now taking place in hydro-aeroplanes this new metal should be particularly valuable, for not only are the metal parts of floats liable to harm from the sea-water, but the other parts of the machine are affected by spray, and by the salt in a humid atmosphere over the sea. As Navaltum can be produced with a tensile strength equal to that of quite good steel, it should also be very valuable for many parts where steel is used at present, and constructors are strongly recommended to carry out experiments with this metal, which appears to offer a simple solution of many difficulties. Already several experienced constructors are using the metal with considerable satisfaction.

Weight for Age in the U.S.A.

One must quote it laconically and verbatim:—" . . . . On Sunday Silas Christofferson carried numerous passengers, among whom was a lady 80 years old, weighing in the neighbourhood of 220 lbs. . ."!

The Week's Work.

MONDAY, March 31st.

R.F.C., Central Flying School.—Misty early. Clear by 9 a.m. Calm till 11 a.m., then freshening south-westerly wind. Fine. On Avro 430, Major Fulton 5 mins. alone, with Lieut. Ross 5 and 15 mins., with Ldg. Seaman Marchant 20 mins., with Sergt. Goodchild 15 mins., with Lieut. Bowhill 20 mins., with Harrison, A.M., 20 mins.; Lieut. Ross 20 mins. and 8 mins. (twice); Ldg. Seaman Marchant 25 mins. alone on straights and 8 mins., first circuit alone; Lieut. Roupell 5 and 12 mins.; Higginbottom, A.M., 8 mins.; Lieut. Conran 5 mins.; Lieut. Oliver 12 mins.

On Maurice Farman 411, Lieut. Longmore with Savill, A.M., 24 and 25 mins., with Turner, A.M., 32 mins., with Sergt. Robbins 25 and 30 mins.; Sergt. Stafford 7 and 13 mins.; Sergt. Kemper 18 and 28 mins.; Collis, A.M., with Petty Officer Hogan 19 mins. with Wireless Telegraphist Stirling 15 mins.; McNamara, A.M., 31 mins.; Ldg. Seaman Bateman 19 mins.; Sergt. Street 25 mins.

On Maurice Farman 418, Major Gerrard 15 mins.; Capt. Tucker 30 mins.; Lieut. Warter 25 mins.; Lieut. Marks 80 mins.; Lieut. Rathborne 160 mins.; Lieut. Burroughs 35 mins.

On Maurice Farman 426, Lieut. Marix 16 and 20 mins.; Lieut. Kennedy 16, 22 and 32 mins.; Lieut. Harvey 60 mins.; Lieut. Boyle 24 mins.; Lieut. Unwin 33 mins.; Capt. Salmond, R.F.A., 20 mins.

On Maurice Farman 427, Capt. MacDonell 38 and 67 mins.; Capt. Mellor 63 mins.; Lieut. Bigsworth 28 mins.; Lieut. Longmore 12 mins.; Lieut. Small 55 mins.; Engr. Lieut. Randall with Chief Mech. Pack 33 mins. On Maurice Farman 428, Capt. Salmond, R.F.A., 25 mins.; Capt. Salmond with Sergt. Mead 10 mins. On Maurice Farman 431, Lieut. Small 11 mins.; Lieut. Holt 90 mins.; Lieut. Glanville 25 and 31 mins.; Lieut. Boyle 12 mins.; Lieut. Arthur 83 mins.; Lieut. Longmore 7 mins.; Lieut. Vernon 12 mins.

On B.E. 417, Capt. Salmond with Capt. Salmond, R.F.A., 16 and 26 mins.; Lieut. Dawes 20 mins.; Lieut. Boyle 7 mins.; Lieut. Marix 20 mins.; Capt. Salmond 9 mins.

On Short 401, Major Gerrard with Sergt. Spencer 5 mins., with Sergt. Wright 10 mins.; Sergt. Spencer 20 mins.; Capt. MacDonell 40 mins.; Capt. Vivian 14 mins. and passing brevet tests 30 mins. On Short 402, Sergt. Vagg 25 mins. at 1,200 ft.; Lieut. Read 23 mins. and 60 mins. at 4,800 ft. Capt. Vivian 6 and 12 mins.; Major Gerrard with Capt. Vivian 7 mins., with Lieut. Littleton 10 mins., with Lieut. Marks 5 mins.; Lieut. Littleton 10 mins.; Lieut. Marks 5 mins.

R.F.C., Farnborough.—Weather fine. On Maurice Farman 305, Capt. Reynolds 45 mins., and 20 mins. with Major Brancer; Lieut. Gould 75 mins, and to Guildford and back; Capt. Board 80 mins; Lieut. Atkinson 20 mins. with Capt. Board; Lieut. Hubbard 10 mins., 5 mins. taking Sergt. Bell, 15 mins. with 1st Air Mechanic Storey; Capt. Reynolds with 1st Air Mechanic Elland. On B.E.201, Lieut. Joubert 25 mins., 10 mins. with Sergt.-Major Thomas, 10 mins. with 1st Air Mechanic Griggs. On B.E.206, Lieut. Joubert 50 mins., 5 mins. with Sergt.-Major Thomas; Sergt.-Major Thomas 100 mins. and 70 mins.; Lieut. Watson 25 mins. and 60 mins. On Brégu̇et 211, Major Raleigh 18 mins., 8 mins. with Sergt. Hunter, 10 mins. with Mechanic Gerrard; Sergt. Hunter 17 mins., 6 mins. with Mechanic Maskery, 7 mins. with Sergt. Lamen; Lieut. Playfair 17 mins., 5 mins. with Lieut. Worsley; Capt. Beor 14 mins.; Lieut. Chinnery 15 mins.

R.F.C., Montrose.—Cross-country observation flights during forenoon by Major Burke on B.E.; Capt. Becke with Capt. Longcroft, and Lieut. Martyn with Lieut. Pepper on Maurice Farmans. Later Capt. Longcroft on B.E. twice.

Hendon.—At Grahame-White School, Mr. Bayetto on B.2, circuits.

At Deperdussin School, Mr. Bauman and Lieut. Bourke rolling and hops on No. 2. Mr. Barron first lesson on No. 2, 20 mins. rolling.

At Bleriot School, Mr. Seymour Mecford on No. 3. Mr. Loftus Bryan and MM. R. Desoutter and Clappen circuits and figures of 8. Capt. G. Cox and Mr. Williams rolling on No. 1.

At Temple School, Mr. Temple testing Blériot. Messrs. Vaile, Penny, Ritchie and Lance all rolling on Blériot. Mr. Temple on Caudron continuously.

Brooklands.—At Vicker's School, early, Mr. Knight on biplane, Mr. Barnwell with Mr. Wight (new pupil). Mr. Barnwell on No. 3 mono. Lieut. Blatherwick, R.N., very good straights. Mr. Knight on biplane with Mr. Wight. In afternoon Mr. Knight straights on No. 3. Mr. Barnwell on biplane with Mr. Wight, latter promoted to front seat in first day's practice. Mr. Knight (pilot) with Mr. Wight.

At Bristol School, Mr. Merriam alone, and with Mr. Landon. Pupil then alone first time. Lieut. Morgan circuits. Mr. Landon straights and half turns. In afternoon Mr. Merriam with Lieut. Peirse. Lieut. Morgan circuits. Mr. Bendall with Lieut. Peirse. Lieut. Peirse alone. Lieut. McClellan straights. Mr. Landon circuits with right-hand turns, and figures of eight.

At Howard Flanders School, Mr. Raynham on biplane (A.B.C.) 20 mins. circuits, then with Mr. Dukinfield-Jones for 15 mins. Later 30 mins. alone with spiral from 1,000 ft.

Dover.—Lieut. Creswell on Short biplane with passenger arrived from Eastchurch about 5.15 p.m., returning shortly afterwards.

Windermere.—Lakes Flying Co. Mr. Adams four passenger flights in "Water Hen." Mr. Bland practice.

Salisbury Plain (Bristol School.)—Fog very thick. Lieut. Griffith on mono 20 mins. Mr. Pixton with Lieut. Bromet for a cross-country round Fargo, Shreevton and Knighton Down, pupil in charge. Lieut. Read to 500 ft. Mrs. Grace, wife of Capt. Hamilton Grace, an old pupil, with Mr. Pixton.

Leeds.—Mr. H. Blackburn flew from Lofthouse Park, nr. Leeds, round Wakefield, circling the town at 1,500 ft. Lofthouse Park, site of new Yorkshire Aerodrome, to be officially opened at Whitsuntide. Exhibitions will be given Wednesdays and Saturdays throughout year.

TUESDAY, April 1st.

R.F.C., Central Flying School.—Strong south-westerly wind, very bumpy. Showers early morning. Dull. On Avro 434, Lieut. Roupell 17 mins.; Lieut. Oliver 20 mins, Lieut. Ross 10 mins. On Maurice Farman 411, Air Mechanic McNamara 30 mins.; Leading Seaman Bateman 31 mins. On Maurice Farman 418, Lieut. Marix 15 mins. On Maurice Farman 426, Lieut. Harvey 10 mins.; Capt. Salmond, R.F.A., 11 and 21 mins.; Lieut. Marix 19 mins.; Lieut. Unwin 26 mins.; Lieut. Kennedy 26 mins. On Maurice Farman 427, Lieut. Holt 30 mins.; Lieut. Bigsworth 23 mins.; Lieut. Vernon 28 mins.; Capt. MacDonell 30 mins. On Maurice Farman 431, Capt. Mellor 35 mins.; Lieut. Soames 31 mins. On B.E. 417, Capt. Salmond 6, 8, and 9 mins; Lieut. Dawes 25 mins. On Short 401, Lieut. Read 35 mins; Capt. MacDonell 25 mins.

R.F.C., Farnborough.—On Maurice Farman 305, Capt. Reynolds 15 mins. with Mechanic Morgan. On B.E.206, Lieut. Joubert, 22 mins.; Capt. Beatty 14 mins. with Lieut. Waldron and 20 mins. alone; Lieut. Waldron 61 mins.

R.F.C., Montrose.—Major Burke on B.E. short flight. Capt. Longcroft on B.E. to Dundee with Lieut. Fletcher; Capt. Becke, Lieut. Maclean, Lieut. Martyn, Lieut. Pepper on Maurice Farmans.

Hendon.—At Grahame-White School, Mr. Bayetto on B.2.

At W. H. Ewen School, test by M. Baumann on 35-h.p. Caudron Messrs. Torr and Stewart straights and half-circuits on same. Mr. Travers, R.N.R., on 70-h.p. Gnome Caudron to Eastchurch, arriving well under an hour. Mr. Lewis Turner exhibitions on 60-hp. and 35-h.p. Caudrons.

At Deperdussin School, Lieut Bourke. Messrs. Bauman and Barron rolling and hops on No. 2, latter breaking chassis struts. Mr. Brock two tests on racer No. 5.

At Bleriot School, Mr. Loftus Bryan and M. R. Desoutter circuits on No. 3.

At Temple School, under Mr. Temple, Messrs. Vaile, and Lance 10 mins rolling.

Brooklands.—At Vickers School, Mr. Barnwell on No. 5 mono in afternoon.

At Bristol School, Mr. Bendall early test, but wind prevented school work. Another test by Mr. Bendall in afternoon.

WEDNESDAY, April 2nd.

R.F.C., Central Flying School.—Very strong south-westerly wind. Heavy showers. On Maurice Farman 411, Sergt. Stafford 10 mins. On Maurice Farman 429, Lieut. Longmore with Wireless Telegraphist Stirling 35 mins.

R.F.C., Farnborough.—On B.E.206, Lieut. Joubert 15 mins.; Capt. Beatty 10 mins.; Lieut. Waldron 30 mins. On Maurice Farman 305, Capt. Reynolds 10 mins.; Lieut. Gould 10 mins.

R.F.C., Montrose.—Short flights by Capts. Longcroft and Becke on BE., and Lieuts. Martyn, Pepper, Fletcher and Maclean on Maurice Farmans.

Hendon.—At Graham-White School, Mr. Lan Davis on B.4 and B.2. Mr. Major (new pupil) on No. 7 biplane straights with instructor.

At W. H. Ewen School, Mr. Lewis Turner on brevet machine and Messrs. Torr, Zubiaga and Warren straights and half-circuits. M. Baumann on 35-h.p. Caudron No. 2. Mr. Stewart straights and Lieut. Adams and Mr. Pendlebury rolling.

At Deperdussin School, Lieut. Bourke and Mr. Bauman grass-hopping on No. 2. Mr. Barron rolling. Mr. Brock fine flight on No. 5 35-h.p. racer, in stiff breeze.

Brooklands.—At Vickers School, Messrs. Knight and Barnwell on biplane early. Lieut. Blatherwick on No. 3 mono. Mr. Knight (pupil) also on No. 3. Mr. Knight (pilot) and Lieut. Blatherwick on biplane

At Bristol School Mr. Bendal tested two machines, Lieut. Peirse straights, Lieut. Morgan circuits. Mr. Bendall with Lieut. MacClellan. Mr. Landon figures of eight.

Stamford.—Mr. Blackburn exhibiting. On initial flight in strong wind rose to 1,200 ft., distributing 2,500 handbills over town.

Dover.—Mr. Hamel on new Blériot left with passenger and came down at Malines, in Belgium, owing to broken valve.

THURSDAY, April 3rd.

R.F.C., Central Flying School.—Very strong north-easterly wind; fine, clear. On Maurice Farman 431, Lieut. Longmore 10 mins alone, with Lieut. Boyle 5 mins, with Lieut. Soames 5 mins. On Short 401, Major Gerrard 10 mins.

R.F.C., Farnborough.—On Maurice Farman 305, Capt. Board 15 mins.' circuits. On B.E.206, Lieut. Waldron to Reading and kept there by weather. On Bréguet 211, Sergt. Hunter 5 mins., 10 mins. with Mechanic Chambers; Lieut. Chinnery 15 mins.; Capt. Beor 15 mins.; Capt. Shepherd 10 mins.; Lieut. Wanklin 10 mins.; Lieut. Playfair 2 mins. straight. Mr. Ronald Kemp testing R.A.F. "warplane."

R.F.C., Montrose.—Inspection of Machines by Major Sykes. Short flights by all pilots. After inspection Major Sykes on B.E. with Capt. Longcroft to Edinburgh to catch train.

Hendon.—At Graham-White School, Mr. R. H. Carr straights on No. 7.

At W. H. Ewen School, Mr Turner on Caudron with Mr. Torr. Mr. Zubiaga straights and half-circuits. M. Baumann on 35-h.p. No. 2 with Lieut. G. Adams. Mr. F. W. Goodden straights.

At Deperdussin School, Lieut Bourke broke patten in rough ground. Mr. Brock on No. 5 reached 2,000 ft. in 20 m.p.h. wind. In afternoon on same machine he reached 2,350 ft. in 45 m.p.h. wind.

Brooklands.—At Vickers School, Mr. Barnwell on biplane, then with prospective pupil, then with Lieut. Blatherwick. Mr. Knight alone.

At Bristol School, Mr. Bendall with Lieut. Logan (new pupil). Lieut. Peirse straights; Mr. Landon and Lieut. Duncan alone. Mr. Bendall with Lieut. Morgan, Mr. Bendall with Lieut. Broder.

Stamford.—Mr. H. Blackburn again out giving fine exhibition.

FRIDAY, April 4th.

R.F.C., Central Flying School.—Very strong north-easterly wind. Fine, clear. No flying.

R.F.C., Montrose.—Short flights in early morning by all pilots. Major Burke, Capts. Becke and Longcroft on B.E. machines. Lieuts. Martyn, Pepper and Fletcher on Maurice Farmans.

SATURDAY, April 5th.

R.F.C., Central Flying School.—Very strong north-easterly wind. Fine, clear. No flying.

R.F.C., Montrose.—Machines all out at 7 a.m. for short flights. Capts. Becke and Longcroft in afternoon to Dundee and Arbroath, working in conjunction with local Territorials.

Hendon.—At Blériot School, Mr. Hamel out with Miss Trehawke-Davies in a big and gusty wind at 4,000 ft.

At Deperdussin School, Mr. Brock flew to Brooklands in 17 mins. on No. 5 in 45 m.p.h. wind. Rose to 2,000 ft. in 15 mins.

SUNDAY, April 6th.

R.F.C., Central Flying School.—Very strong north-easterly wind. Fine, clear.

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Next Saturday's Programme.

APRIL 12th, 1913.

(Weather permitting.)

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An altitude contest will take place at 4.30—always an interesting event. Between 4 and 4.30, and from 5.15 till dusk further exhibitions and passenger flights to visitors will be given.

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On Saturday, April 19th, 1913, the Lord Mayor and Aldermen of the City of London will visit the London Aerodrome. This is to be known as LONDON DAY, and is a special effort to show London City men how far aeroplanes have advanced in practical utility. Full particulars next week.

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THE AEROPLANE

1d WEEKLY

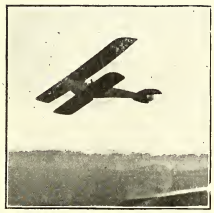
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VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, APRIL 17, 1913. No. 16.

THE PRINCIPAL PRIZE WINNER.



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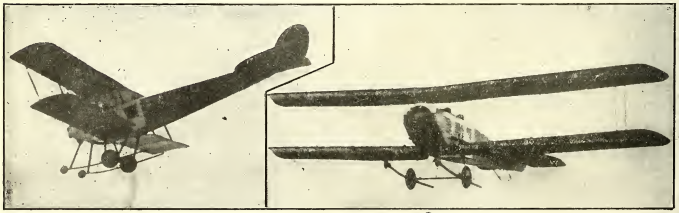
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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London. 3rd.

A Plea for the Royal Aircraft Factory.

Mr. H. G. Wells has a great mind—one is always prepared to admit the greatness of those whose ideas agree with one's own—and his recent articles in the "Daily Mail" must necessarily add to his reputation, for although written for the consumption of the readers of the daily Press, who prefer to bolt their mental pabulum in tabloid form, he has managed to get in certain home truths which ought to be forcibly led into those whose business it is to manage the defences of this country.

Mr. Wells, on April 8th, after remarking that "we count our strength in Dreadnoughts," points out the folly of putting our trust in capital ships, and says of our supposititious enemy, "unless he is a lunatic, he will prove to be much stronger in reality than he is on paper in the matter of submarines, torpedo-boats, waterplanes, and aeroplanes. On the cloudy and foggy nights so frequent about these islands he will have extraordinary chances, and, sooner or later, unless we beat him thoroughly in the air above and in the waters beneath, some of these chances will come off." He shows the small cost of aircraft and small seacraft alongside our super-Dreadnoughts and the bigger and bigger ships which follow them. And then he drives home a truth which in my small way I have endeavoured to impress on readers of this paper—the tremendous mental indolence of the English. He says: "We need a new arm to our Service, and that arm is Research. We need to place inquiry and experiment upon a new footing altogether, and to enlist for them and organise them, to secure the pick of our young chemists and physicists and engineers. We need a service of invention to recover our lost lead. I am convinced that we are spending upon the things of yesterday the money that is sorely needed for the things of to-morrow."

The Wolves and the Buffalo.

One of the memories of the youth of most men is the picture of the buffalo pulled down by prairie wolves. The analogy holds good for the annihilation of a huge battleship by small craft of the destroyer class, which are the wolves of the sea. Curiously enough, Mr. Wells' idea coincides with that of one of our most distinguished naval officers, who said to me a few days ago: "The North Sea is not going to be a comfortable place for big ships in a naval war. What with submarines, destroyers, and dirigible balloons, it will be much too thickly populated." He explained that, though no existing aeroplane could harm a battleship, a dirigible balloon carrying five or six tons of explosives was another story, and that a battleship, or even a fleet, worried by submarines below, destroyers on the surface, and dirigibles above, any one of which could sink a ship if it once got home, was so unsafe that the risk would not be justified by any good it could do.

Now here is where the aeroplane comes in. Admitting it is useless against battleships except as a scout, but against the enemies of battleships it is highly effective. It is a comparatively simple problem, given the money, to evolve an aeroplane which will carry a sufficient load of explosives to destroy either a submarine, a destroyer, or a dirigible. It is safe enough against retaliation from either. The ships cannot hit back effectively, and the aeroplane should be able to fly faster and climb higher than any dirigible can do at the same stage of development. Occasionally a high-angle gun may bring an aeroplane down, but the odds are in favour of the aeroplane. Also, in daylight, the aeroplane is deadly against submarines, which can only escape being discovered if they dive for depths and periods at present practically impossible. In effect, the armed aeroplane of the future amounts to a destroyer of destroyers. The immediate problem is to hasten the development of such an aeroplane.

Similarly, for the Army we need large armed aeroplanes, though not so large as those for the Navy. Also, we need dirigibles for both Services—small, fast ships which can be packed up easily, and big ships of super-Zeppelin type. All these can only be produced by the expenditure of money and brains, and those brains have actually to be the best in the world, not merely those which are alleged to be the best. Experiments must be tried, and must be paid for whether they succeed or fail, and it is the Government who must pay.

It will be remembered that the Royal Aircraft Factory was originally supposed to be an experimental workshop where practical tests could be made on a large scale of theories of all sorts, but especially those of the National Physical Laboratory. For a variety of reasons the amount of experimenting done there has not been as great as it should have been, and one gathers that lack of money is one reason.

A Plea from "Pegasus."

From time to time there appear in the Engineering Supplement of the "Times" articles on aeronautics signed by "Pegasus." The identity of this writer is not generally known, but internal evidence deduced from the manner and matter of his articles lead one to believe that he is at least in very close touch with the Royal Aircraft Factory, for whole passages are sometimes built up of phrases so familiar as to read almost like quotations from semi-official communications. In a recent article "Pegasus" says: "No good purpose can be served by dwelling on deaths due to aeroplanes so long as it is certain that the authorities are not skimping the money needed for research in the direction of safety. If, however, it is discovered that experimental expenditure is being cut down to make a more easily advertised count of nondescript aeroplanes, the public which entrust its youth to the Army and Navy will have something pretty trenchant to say to the Government and the departments concerned."

Now, recollect that General Henderson stated, apropos of the £234,000 allotted to the Royal Aircraft Factory, that "the allotment to the Factory includes nearly everything we buy, including aeroplanes and the stores for the Royal Flying Corps. It is not published what the allotment is inside that, but it is clearly laid down, and there is no chance of anybody

stealing anybody else's money." Only a few days afterwards I heard on very fairly reliable authority that the sum actually allotted for experimental work was a paltry £9,000. If this is true, or anywhere near true, it simply means that someone on the financial side of the War Office is a more virulent species of fool than even a War Office official has any right to be, and, assuming that "Pegasus" has some inside knowledge of the facts, his comment on the position is remarkably mild.

No one can accuse me of being a prejudiced admirer of the Royal Aircraft Factory, but I have always recognised that much of their work is good, if badly organised in spots, and the ineffective plots of a certain clique do not prevent me from wishing to see the really good workers adequately provided with funds to continue their good work. The "B.E.2" was a splendid machine in her time—a year ago. To-day the type is out of date, and even of the same type there are more efficient machines made by independent constructors. What is needed is a thorough reorganisation of the whole system.

A Rational Solution.

Here is, at any rate, a rational solution of the situation. It is submitted with all due deference. It is probably open to many objections. But, in any case, it would be better than the present method, which can only lead to endless dissatisfaction and ineffectiveness.

In the first place, the allotment to the R.A.F. should be entirely for the R.A.F. If it is so essential that the sum to be spent on aeroplanes should not be exposed, then aeroplanes and R.A.F. stores can be lumped together, but the R.A.F. allotment should be shown clearly as a sum to be expended solely on experiments.

That sum should not be less than £100,000, and it should carry with it the power to buy experimental machines from independent constructors. That is to say, if Mr. Duune, or Mr. Handley Page, or Mr. England, or Lieut. Porte, or Mr. Willows—I name a few men whom I know to have expensive ideas which are worth working out—care to go and convince the chiefs of the R.A.F. that those ideas are worth developing, the R.A.F. should be in a position to offer a fixed sum to the firms with which those designers are connected for a machine which does what the designer claims it will do. Or, as an alternative, the R.A.F. should be able to offer a "grant in aid," just as other Government departments give grants for roads or agriculture. Or the machines might be built in the R.A.F. under supervision of the designers, who would be paid for their work. Or, say in the case of big, rich firms like Vickers, Ltd., the Bristol Co., Sir Samuel White's or the Coventry Ordnance Co., the firm might merely submit a general design and receive an undertaking, if the design was approved, that a sample machine would be bought at a specified price and thoroughly tested, if the detail design was also approved, on delivery. In this way the best brains in the world would actually be brought to bear on the question.

The persons to approve the designs would have to be a board or committee, of which the executive head of the R.A.F. would naturally be a member, but it would also include practical naval and military pilots who know what is wanted for their own purposes—fortunately, there is no lack of such officers. Detail designs would be tested and criticised by the scientific employees at the R.A.F., who would report to this committee, but they would not have an absolute right of veto as at present, and their objections would be laid before the designer, who could then modify his design if convinced of his error, or would have the opportunity of defending his beliefs.

In this way we should acquire for a comparatively small sum a number of really promising experimental machines, which would be far more useful than those which the staff of the R.A.F. itself could turn out, even if it were larger and cleverer than it is at present. So far, the staff has evolved one good machine—the "B.E.2" type—and some others varying between the death-trap "canard" which killed Mr. Ridge and the new "war-plane" in which one detail in particular seems to me bound to cause a smash sooner or later.

By all means let the R.A.F. experiments go on, but let them be honest experiments. I am told that at present a machine absolutely wrecked by the R.F.C. goes into the R.A.F. for repairs and comes out with a new engine, new fuselage, new wings, and new fittings as a "B.E.," which is paid for out of the R.F.C. portion of the allotment as a "repair." In this way it is possible to rob Peter to pay Paul, in spite of General Henderson's statement, and so raise the allotment for experimental work.

Under a proper system every badly damaged machine would be sent to the maker for repair at a reasonable agreed price, instead of, as at present, either building an entirely new machine in the Factory, or sending round for a contract price for repairs and using the prices quoted as a weapon with which to beat down the original maker's price.

The Factory is also needed as a check on the possible voracity of independent constructors who might combine to pile on the price of machines and repairs if there was no Government department to work out what a job ought to cost. Therefore, in the Factory's own interests, quite as much as in the interests of the Services, the Factory should have nothing to do with the buying of machines. Its inspectors may be used to check work on machines which are being built, and its designers may criticise designs as a help to the naval or military authorities, but it should have no direct veto of any kind, nor should officials of the Factory be allowed to superintend practical flying tests. These should be entirely in the hands of officers of the R.F.C. The present system has done an infinity of harm to the R.F.C. and the Factory—thanks to the officiousness, offensiveness, and generally bad tone of certain of these persons, who, dressed in a little brief authority, attempt to domineer over their betters.

There are also a vast number of minor experiments to be carried out of a kind similar to some already made, and the results of these experiments should be made known as soon as possible. At present, one has to wait for a year until the National Physical Laboratory chooses to issue an out-of-date report, or one never knows at all.

For example, who knows exactly how many hours were run before it broke down by the Gnome engine which was run to destruction, and what actually failed? The result should have been published at once. This paper, and others, would be only too happy to give space to such a report, precious as space is to-day, while so much is going on. If a report is issued it will arrive at an uncertain future date when we have all lost interest in 50-h.p. Gnomes and want the same information about the new nine cyl too h.p.

Also, who knows how many times the "B.E." wing was worked before it broke, or whether it broke at all? Personally, having seen the inside of a "B.E." wing, I should not expect it to break, but I should expect the built-up ribs to go flabby so that the machine would lift badly as she got older, with the result that she would apparently become under-powered, the engine would be always running "all out," and consequently a motor accident would happen. Manufacturers want to know these things, and for the good of the Services, as well as on account of being taxpayers themselves, they have a right to know.

Another Need.

One cannot help feeling that one cause of all the present trouble is the lack of an executive head whose

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whole time is concentrated on the Factory. Mr. O'Gorman, the superintendent, draws £1,400 per annum for, I believe, two days' work a week. This places his value at £4,200 per annum, and knowing a little of Mr. O'Gorman's cleverness, I can quite believe he is worth it. True, it approaches the salary of a Cabinet Minister, but, judging by some of our present specimens, that is no compliment to Mr. O'Gorman. It is also more than the salary of a general in the Army, but that cannot be helped. If the superintendent can be induced to concentrate his whole time and energy on putting the R.A.F. on an efficient footing, or carrying out the many needful experiments and publishing them, on studying, picking out, and paying for original ideas, great and small, on getting to know what is really going on inside the Factory and clearing out the wasters on the staff, he will have a job quite big enough to keep him busy, and he deserves to be paid for it.

If all this is done thoroughly, and if the R.A.F. will really settle down to solid experimental work instead of trying to behave as a military establishment when it has a system of discipline which would disgrace a Territorial battalion, it may be of great use in the world. But the man who undertakes its reform has the task of cleaning Augean stables.—C. G. G.

Major Sykes on "Aeroplanes in Reconnaissance."

Major F. H. Sykes (15th Hussars) lectured at the Duke of York's School last Thursday evening on "Aeroplanes in Reconnaissance" to a large audience of officers and men. He did not think that aviation would revolutionise warfare. At present a certain number of men knew very little and the rest knew nothing, while development was so fast that there was difficulty in keeping pace with it. The use of aeroplanes in war entailed risk, but risk was the lot of soldiers. (Hear, hear.) Given decent machines, decent training and an object, the wind had not, so far, caused great accidents, wind did not really knock out aircraft in war. Aeroplanes were only seven years old, alterations had been mainly in regard to details. Sea-flying was easier than land-flying, but the area between the two was most difficult of all to fly over. Below 1,000 ft. aeroplanes would probably be shot at; clouds would be useful for screening. A wreck or two must not be taken too seriously so long as the fund of information was increased.

Both monoplanes and biplanes had their defects and good points; the monoplane had speed, the biplane had weight-lifting capacity. Speed was the whole thing, and everything must be trained up to the mark. In Tripoli and the Balkan war there had been no fighting in the air, and up to the present their experience was nil. Once the command of the air was secured by any Power it would be difficult to wrest it from that Power. It behoves us to take steps in this matter.

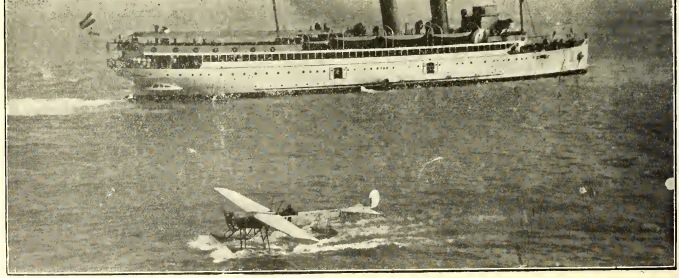
A general discussion followed.

Colonel V. S. Sandeman presided, and among others present were Brigadier General Bingham (commanding 4th Cavalry Brigade) and Captain Collins (Secretary of the Commonwealth of Australia).

Mr. Cody at the N.S.L. Meeting in Farnborough.

Mr. Cody had an enthusiastic reception when he rose to speak at a National Service League meeting in Farnborough on Wednesday (April 9th). "I am proud to be able to force my opinion down some of you," he said, "because here was my first failure on this earth, and here was my biggest success on this earth. . . . I set myself the task to serve the first nation that took me up in the interest of aviation, and I mean to serve them, if they will allow me to, to the end." Mr. Cody described, amid laughter and applause, the development of his man-lifting kite into the aeroplane which, though it had been turned down by the Government, yet "proved to be the best all-round aeroplane for war purposes that could be taken to Salisbury Plain last summer."

Mr. Cody observed, finally, that he had made a bold offer, a few days ago, to build an aeroplane that would climb to 20,000 feet within an hour. That machine, he thought, would prevent any airship from travelling over the country. (Applause.)



The de Marçay monoplane, piloted by M. Bielovucic, passing the ss. "Kaiser" at Monaco.



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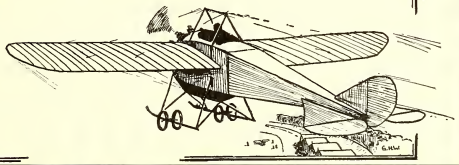
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The Command of the Air.

BY W. E. de B. WHITTAKER.

There are signs that Great Britain is awakening from the deep sleep which began in the great silences of the Victorian Age. In the nineteenth century, wearied by the struggles of the past, Europe paused to rest. For the great nations the time of slumber was short, for national jealousies restore national vigour with surprising speed. But Great Britain, in addition to a certain natural isolation of position, had forces at work which tended towards the preservation of peace albeit of an unhealthy sort. Unexpected commercial prosperity arising from the command of the sea, the absence of direct provocation from abroad, and the growth of the Colonies all helped to feed the Englishman's belief in his superiority over all other mortals. Such military aspirations as were left to the self-centred nation received satisfaction in the numerous small wars against savages on the outposts of the Empire. The glory of these reached Britain whilst the tragedy faded in the distance. And so the people were lulled into the belief that nothing could assail the security of the nation. Governments may have known and realised the dangers, but they have invariably kept their knowledge from the people.

Since the beginning of the eighteenth century the maintenance of the "balance of power" between nations has been the predominant feature of international policy. The Treaty of Utrecht in 1713 defined its principles and for two hundred years it has held sway to the general good of the civilised world. It would seem now as though the old principle were breaking in the general disagreement of the Powers. The Triple Alliance and the Triple Entente represent little that is real. Diplomacy and the pacifists may have their say, but in the grim background a great nation is preparing for a decisive struggle for the mastery of the Western World. The theories of Georgian statecraft are to be put to the test for good or ill.

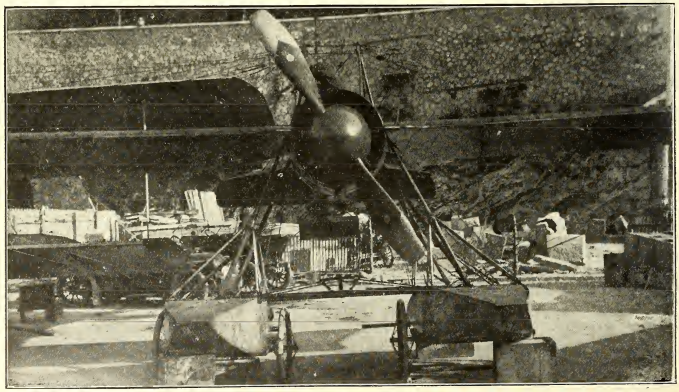
Under normal conditions each nation maintains such an armed force as will preserve its rights at all times. The strength of its army and navy depend upon the extent of its interests. Defence is the excuse for armament and not offence. It may be necessary to take the offensive that an adequate defence may be made, but that does not alter the general principle.

When, therefore, a nation increases its armaments beyond its acknowledged needs then should its action be taken as a distinct threat to some other Power. And it is well if such a Power takes the warning. Germany has during the last twenty years increased its army and navy to dimensions greatly in excess of its requirements. Therefore it is clear that a possible attack on another nation is intended. That other nation may be France, but it is equally likely to be Great Britain. The enmity of France and Germany cannot be accepted as an eternal principle. National feelings and personal feelings alter in much the same way. Hence we should be prepared for all eventualities. So many phrases are recognised as platitudes and ignored in practice.

We have the command of the sea, and this, they tell us, gives us the command of such land as we want. But a new element must be taken into consideration. The practice of war now extends to the air, and unless the signs are wrong, predominance on land or sea depend largely upon predominance in the air. It is essential that Great Britain shall have the command of the air.

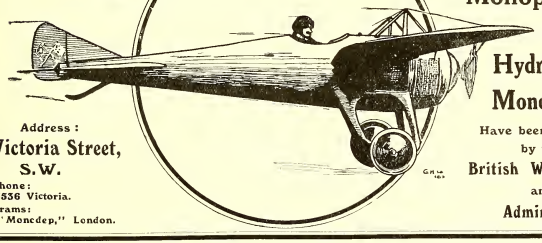
But it is a grave mistake to speak of success on land or sea or in the air as separate matters. No nation can be successful on one and unsuccessful in another and yet remain supreme. Success must be attained everywhere.

Those who spend the greater part of their time in dealing with aeronautical matters are a little apt, not unnaturally, to exaggerate the importance of an aerial



Front view of the Deperdussin monoplane flown at Monaco by M. Prévost.

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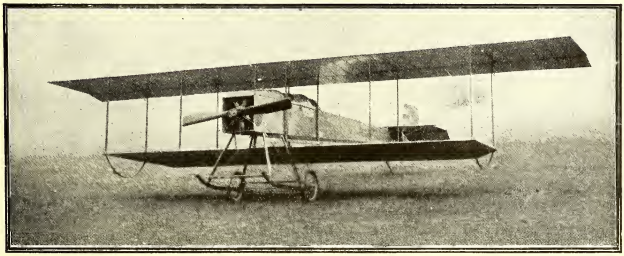


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fleet. It cannot stand alone, it cannot operate alone. A nation possessing a very small army and navy and a very large aerial force could not rely on success against a rival well equipped on land and sea, but with few aeroplanes or dirigibles. For though it might gain momentary command of the air, it could not retain it, as on land or sea the enemy would succeed. Consequently the bases from which the aircraft operate would fall. The aerial force bereft of supply stations would be in a parlous state.

At the same time, it must be remembered that in the case of two hostile nations, one of which is slightly the inferior of the other on land and sea, but stronger in the air, that nation would probably carry the day. It is necessary to retain a due sense of proportion in these matters. The tendency is always to over-estimate the value of a new science. If a comparison be made of the aerial strengths of each Power in relation to the naval and military forces of those Powers, some idea can be gained of the proportions to be desired.

It is useless to lay down a programme of two aeroplanes to one, or two airships to one, unless the land and sea strength of the nation used as a meaus of comparison is in the proper proportion to its aerial fleet. This is perhaps not sufficiently realised by critics.

(To be continued.)

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," April 4th:

War Office, Regular Forces.—Royal Flying Corps, Military Wing.—Second Lieutenant Robert R. Smith Barry is confirmed in his rank.

From the "London Gazette," April 11th:

Royal Flying Corps, Military Wing.—To be flying officers and to be seconded; March 7th, 1913: Capt. Robert Pigot, Rifle Brigade (Prince Consort's Own); Lieut. Philip B. Joubert de la Ferté, R.A

Admiralty Appointments, April 4th:

Carpenter J. J. Brownridge to the "Actæon," additional, for training in repairing aeroplanes; to date April 3rd.

Admiralty Appointments, April 12th:

Lieutenants: Reginald Gregory to the "Actæon," additional, as Squadron Commander, for command of Yarmouth group of air stations; Christopher L. Courtney to the "Actæon," additional, as Flight Commander, for Yarmouth air station, to date April 15th.

Royal Marines.—Captain Charles E. Risk, R.M.L.I., to the "Actæon," additional, as Flight Commander, for command of Harwich naval air station, to date April 15th.

Lieutenant Thomas S. Creswell to the "Actæon," additional, as flying officer for Yarmouth naval air station, to date April 1st.

Two new "B.E." biplanes are expected at Montrose this week.

On April 8th a serious accident happened upon Salisbury Plain, involving the destruction of two biplanes, an 80-h.p. Henry Farman and a "B.E." The latter machine, piloted by Lieut. Porter, with Capt. Allan as passenger, had landed and was running up a rise behind the Farman, which was starting, Lieut. Wadham piloting and Lieut. Carmichael in the passenger's seat. Lieut. Porter, perhaps realising that he was overtaking the Farman, pulled the "B.E." into the air again, but his skids, unfortunately, did not clear the other machine's top plane. As a result, Lieut. Wadham was taken to hospital suffering from slight concussion. The other three, though severely shaken, were practically unhurt.

On Friday last Capt. C. E. Risk, R.M., with Chief Engine-room Artificer Susans as passenger was taking a new Henry Farman from Farnborough to Eastchurch for delivery. Over Sheerness Harbour the carburetter froze, and after a 600 ft. vol plane to the marshes near Queenborough the machine overturned on the rough ground, throwing the occupants out. Capt. Risk sustained slight concussion and an injury to the upper part of his spine as well as a bruise by the right eye. Susans had his right shoulder dislocated.

Paymaster Parker flew from Eastchurch to the scene of the accident on Short naval biplane No. 28, but the prompt measures taken by Mr. Harmer, stationmaster at Queenborough, rendered this aid unnecessary. Mr. Harmer sent an engine, vans and stretcher as near to the spot as possible, and by these means the injured men were quickly conveyed to Royal Naval sick quarters at Sheerness.

FRANCE.

Colonel Bouttieaux is at present at Algiers, with the intention of inspecting the French aeroplane services in Algeria.

Escadrille No. 1, stationed at Toul and composed of Henry Farman biplanes, has been employed daily in long reconnaissances. Quartermaster Guitou and a mechanic left Nancy last week on a Henry Farman biplane 80-h.p. Gnome (Le Toulois) and flew by Luneville, Pont à Mousson, Saint-Mihiel to Commercy, where they remained two days, then returning to Nancy by the same route.

Lieutenant-aviator Mailfert is now making experiments on a Henry Farman biplane (100-h.p. Gnome) fitted with a mitrailleuse. He is at Chalons Camp.

Lieutenant-aviators Gaubert and Dumas, on a Hanriot-Pomnier monoplane (80-h.p. Gnome), flew on April 7th a distance of 155 miles without landing. Leaving Mailly, they passed over Vouziers and Reims and then returned to Mailly. In the early stage of the flight they had to pass through a hail-storm.

The National Committee have negotiated with the municipality of Montmedy and have arranged that a landing ground shall be formed at that place. Despite the small population, a sum of £350 has been raised locally.

Colonel Bouttieaux, desiring to inspect the aviation centre at Ouargla, intends to fly to that place from Biskra with an escadrille of four Farman biplanes (80-h.p. Gnome engines) piloted by Lieutenants Reimbert and Cheutin and Quartermasters Hurard and Benoit. The escadrille will be accompanied by an "aerosable"—that is, a light chassis propelled by an air propeller driven by a four-cylinder Aster Pierron motor. This car is especially designed for work over sand.

Lieutenant-aviators Gignoux and Grezaud, of the Epinal escadrille, flying Maurice Farman biplanes, flew to Luneville some days ago and passed over the captive Zeppelin. Later they flew to Lyon. On April 9th they left Lyon for Epinal, where they arrived safely after landing at Pont-Devaux.

Captain Barés, flying a Maurice Farman biplane, left Buc at 8 a.m. on April 10th and flew to Cône, where he arrived at 10.30 a.m. He had his mechanic as passenger. He is to take part in some reconnoitring experiments.

During the Spring Review at Lyon on April 10th five aviators flew over the troops. They were Lieutenant Chabert (Blériot-Gnome monoplane), Lieutenant Gabriel (H. Farman-Gnome biplane), Lieutenant Mouchard and a passenger (M. Farman-Renault biplane), and MM. Plantiers (H. Farman biplane) and Lacrouze (Deperdussin monoplane).

Four Deperdussin two-seated monoplanes (80-h.p. Gnome) of the Maubeuge escadrille and piloted by Lieutenants Radisson, Lalanne and Rochette, and Sous-officier Verdier, flew from Maubeuge to Sissonne and back at a speed of 67 miles an hour and at a mean altitude of 2,500 ft. On the following day the same machines and pilots again travelled to Sissonne to take part in fire-control experiments. Lieutenant Brocard and Sergeant Didier, also flying Deperdussin monoplanes, came to Sissonne from Reims.

Five Nieuport monoplanes, piloted by Sergeants de Saint André and de Marmier, Sapper Rolane and the pilots Bonnier and Bertin, flew in company on April 10th from Villacoublay to Rambouillet to attend the unveiling of a monument to Lieutenant Byasson. Later, they returned to Villacoublay and thence to Issy les Moulineaux.

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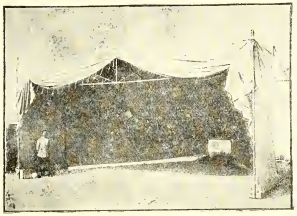
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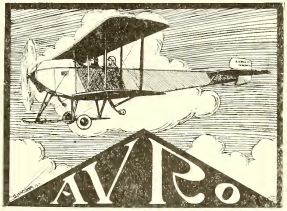
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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

On April 12th, at Buc, seven Blériot monoplanes were taken through their reception tests for the French army by M. Perreyon.—W.

GERMANY.

Two hydro-aeroplanes fitted with wireless telegraphy have been dispatched by rail from Wilhelmshavn to Kiel.

A military aviation station is to be created at Mannheim.

The Zeppelin dirigible "Z.4" was more seriously injured during its recent voyage into France than was at first supposed. The necessary repairs will take some time to complete. Captain Glund, its pilot on the ill-fated day, is now under examination in Berlin.

A naval hydro-aeroplane station is to be opened at Warnemunde, on the North Sea.

The Ministry of War has decided to form a corps of aerostiers and a dirigible station near Dresden.

On high authority, it is stated that the Prussian army possesses from 260 to 300 aeroplanes; the Bavarian army has 100, and the Saxon army from 20 to 30. In these figures are included the reservist machines at Doeberitz and other military stations. The total number of aeroplanes, civil and military, at the disposal of the Ministry of War is over 650. —W.

Lieutenant Canter and his passenger, Lieutenant Boehmer, have accomplished their self-set task of a North German circuit, covering 1,200 kilometres in a net flying time of 11 hrs. 34 mins. Starting from Jueterboy on a steel Rumpler-Dove fitted with an 85-h.p. Mercédès motor, they crossed Berlin and Neubrandenburg on their way to Lübeck, beating several world's records en route. The weather and lessening petrol forced them to land at Malente, where they were storm-bound for two whole days, during which time the aeroplane was anchored in a field, minus any shelter, strapped and roped down to wooden stays they drove deep into the ground. Restarting on April 3rd, Lieutenant Canter wended his way to Kiel, where he manœuvred over the harbour and put up in the Zeppelin hangar. Another delay was made necessary by the gales, and Hamburg was eventually visited on the return journey to Berlin-Doeberitz, where the aeroplane landed in a pelting rain.

The City Council of Dresden has decided to erect a military revolving hangar for two Zeppelin airships, as well as barracks for an airship battalion. Besides this, the proposal to build a private airship hangar was accepted almost unanimously. The military station is to be housed at Dresden-Kaditz.

Lieutenants Pretzell and Kerner, the latter acting as observer, carried out an interesting flight last week on a military Rumpler-Dove, when they flew from Metz to Hamburg, spending the night in the fine hangar at Muenster.

The town of Freiburg, in Baden, has granted a sum of 350,000 marks towards the military aviation station destined for this quaint old city. The civic authorities present the War Office with the necessary territory and will put up the barracks and mess-rooms. They receive five per cent. on the capital. —B.

BELGIUM.

A second escadrille of four Farman biplanes is to be stationed at Liége. The headquarters of this force is at the aerodrome of Ans. The escadrille will be at Kiewit from April 15th to June 15th, that it may act in manœuvres with the troops at the camp of Beverloo.

The town of Namur is to have an escadrille, but in the absence of either aerodrome or sheds, the time is some way off.—W.

SPAIN.

M. Bernard, on April 9th, made the necessary test flight on a Maurice Farman biplane (70-h.p. Renault), at Buc, destined for the Spanish army. With M. Senouque as passenger, a duration flight of one hour was made at a height of 1,600 ft. Later, taking Captain Herrera, of the Spanish army, as passenger and with full load of fuel, a climb of 1,600 ft. in seven minutes was made.—W.



Repairing M. Prévost's Deperdussin monoplane after its accident on April 7th.

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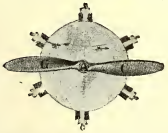
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U.S.A.

On April 9th Lieutenant Brereton, U.S.N., with Lieutenant Rex Chandler, U.S.N., as passenger, was flying a Curtiss hydro-aeroplane over San Diego Bay, California. For some unexplained reason the machine dived suddenly into the sea from a height of 100 ft. Lieutenant Chandler was killed instantly and Lieutenant Brereton was seriously injured.—W.

FOREIGN NOTES.

France.

Madame de Laroche is now at the Henry Farman School at Buc and is making flights daily on a Henry Farman biplane, sometimes with the school pilot and sometimes alone.

M. Legagneux started from Marseilles at 5.15 a.m. on a Morane-Saulnier monoplane in an attempt on the Coupe Pommery. He intended to fly to Calais, but had to land at Montélmar shortly after 7 a.m. owing to the bad weather.

M. Brindejonc des Moulinais, in his 50-h.p. Gnome-Morane-Saulnier monoplane, arrived on Saturday last at Saragossa from Madrid and left at 1.35 p.m. for Barcelona, where he arrived at 3.40, having covered 300 kilometres in a strong wind. His destination is Paris via Barcelona and Lyon.

M. Latzel flew over Paris at a height of 1,000 m. on Saturday in a 40-h.p. Anzani-Brageas monoplane, starting from and returning to Juvisy. On Sunday, M. Champel also flew over Paris in a 100-h.p. Anzani-Champel biplane, taking three passengers.

M. Maurice Farman, continuing his Sunday excursions on the 13th inst., flew to the Chateau of Chambord with M. Tancrède as passenger.

News comes from the East that the plucky Georges Verminck (who has been making an extended exhibition tour with M. Marc Pourpre) has met his death at Saigon. M. Verminck, though of French nationality, was born at Southport on February 20th, 1886. His brevet was No. 1084; he took it so recently as October 4th, 1912. His brother Charles, who was on the way to Saigon to join the two aviators, will have arrived just in time to hear of the tragedy.

Montpellier has held an aviation week, which came to an end on the 7th inst. During the course of it M. de Marmier, a Nieuport pilot, flew over the town while the President was there.

Germany.

The month of March witnessed great activity at Berlin-Johannisthal, where 81 aviators made 1,564 ascents, totalling 205 hours 51 mins. on 26 days. Cremer, the Fokker pilot, topped the list with 120 flights, whilst Sedelmayer, who steers a Wright biplane, was longest aloft with 15 hours 35 mins.

A fatal accident occurred at Gelsenkirchen-Essen on the 9th inst. whilst the Grade pilot Lichte was competing for the £50 one-hour prize given by the National Fund. Lichte had almost finished when a gust caught his machine, turning it completely over and dashing it to earth with such violence that it burrowed deep into the ground. Lichte was dead on the spot; he was only twenty years of age and had been in possession of a brevet since January.

On April 1st a new system of increasing the number of aviators throughout Germany came into effect, arranged by and at the expense of the National Aviation Fund. Eighteen of the leading German works have the right of instructing five pupils from the date aforementioned until September 30th receiving their dues from the fund. Of this number, three must have passed through a board or grammar school, own a medical certificate as to their physical soundness, not yet have served in the army, and have agreed to enter the aviation corps when their military service commences. The other two, not over 35 years of age, can be either lance-corporals, sergeants, or officer-aspirants of the reserve troops and be willing to undergo a certain term of service with the aviation troops for the next few years. On a pupil receiving his brevet as a field pilot, a sum of £400 is paid to the factory in question. The National Fund insures each pupil during the six months' course and altogether is displaying unparalleled activity in the furtherance of aviation.—B.

A Correction.

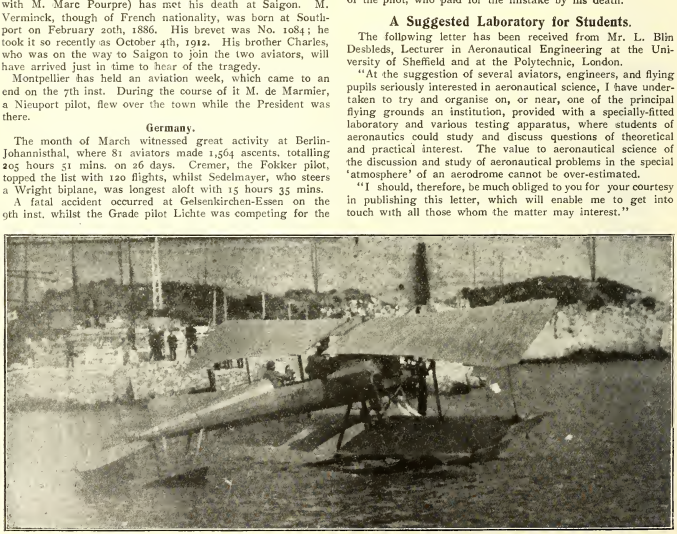
Owing to an unfortunate error in last week's AEROPLANE the machine on which Quartermaster Chauroux was killed at Amien was stated to be an Hanriot monoplane; actually it was a Deperdussin. The accident was not due in any way to the machine, and was caused entirely by the carelessness of the pilot, who paid for the mistake by his death.

A Suggested Laboratory for Students.

The following letter has been received from Mr. L. Blin Desbleds, Lecturer in Aeronautical Engineering at the University of Sheffield and at the Polytechnic, London.

"At the suggestion of several aviators, engineers, and flying pupils seriously interested in aeronautical science, I have undertaken to try and organise on, or near, one of the principal flying grounds an institution, provided with a specially-fitted laboratory and various testing apparatus, where students of aeronautics could study and discuss questions of theoretical and practical interest. The value to aeronautical science of the discussion and study of aeronautical problems in the special 'atmosphere' of an aerodrome cannot be over-estimated.

"I should, therefore, be much obliged to you for your courtesy in publishing this letter, which will enable me to get into touch with all those whom the matter may interest."



The Bréguet biplane piloted by M. Bregi starting in the Grand Prix Race.

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Questions in the House.

ORAL ANSWERS.

Aircraft.

10. Mr. FREDERICK HALL (Dulwich) asked the First Lord of the Admiralty what amount was spent by Germany in 1912 on airships and aeroplanes for naval purposes and for buildings and equipment in connection therewith; what amount is provided in the German Naval Estimates of 1913 for the same purposes; what were the amounts provided and actually spent under these heads by Great Britain in 1912-13; and what expenditure is proposed in 1913-14.

Mr. CHURCHILL: The amount provided in the German Navy Estimates for the financial year 1912-13 for airships and aeroplanes for naval purposes and for buildings and equipment in connection therewith was £114,970. Information as to the actual expenditure is not available. The corresponding amount provided for 1913-14 is £183,464, but it is stated in the Press that a Supplementary Estimate is to be proposed amounting to £146,771, which would bring the total for 1913-14 to £330,235. As regards Great Britain, the amount provided in the Navy Estimates for 1912-13 was £141,150, the amount expended in that year being approximately £183,800. The amount provided for 1913-14 is £321,620. I am not prepared to say that the actual figure is necessarily the final figure for British expenditure.

Mr. F. HALL: Do I understand that the right hon. gentleman states that the actual figures may not be taken as the final figures, and is the House to understand that if necessary he will come down for additional Estimates for the aerial service?

Mr. CHURCHILL: The hon. gentleman may rely on our taking all steps that are necessary.

11. Mr. F. HALL asked if there are at the present time in the possession of the German Government any dirigible airships of the rigid type capable of a speed of 40 miles an hour or over, of flying 500 miles or more without requiring to descend, and equipped with guns and bomb-dropping apparatus; if so, what is the number of such ships constructed or in course of construction; and how many airships of equal value are in the possession of, or have been laid down for, the British Navy?

Mr. CHURCHILL: There are no rigid airships of this value in the possession of the British Navy at the present time. Two airships almost capable of the above performances will be in the possession of the Admiralty in the course of the next month or so. There are no rigid airships built or building as yet for the British Navy.

Mr. F. HALL: Will the right hon gentleman answer the first part of the question?

Mr. CHURCHILL: I could not speak with absolute certainty respecting the performances of vessels which I have never seen, and no person connected with the Admiralty has ever seen, and the details of which are kept most carefully secret by the foreign Government concerned.

Mr. F. HALL asked what number of dirigible airships of the rigid type for naval purposes is proposed to be constructed in 1913-14, and the dimensions, speed, and carrying capacity of the same.

Mr. CHURCHILL: The question of the construction of rigid airships for naval purposes is now under consideration. It is not considered advisable at present to give any information as to their probable numbers or dimensions.

Airships.

30. Sir SAMUEL SCOTT asked the Secretary of State for War whether, in view of the First Lord's offer to the Leader of the Opposition to name two hon. gentlemen to verify certain facts as to the shortage of men in the Navy, he will extend the same invitation to the right hon. gentlemen with respect to military aeroplanes.

Colonel SEELY: I have already informed the House of the number of aeroplanes in the possession of the Army. The question of whether this number is adequate has already been discussed, and there will be further opportunities of debate on this point later on this year.

45. Lord C. BERESFORD asked the Prime Minister whether any French company approached either the Admiralty or the War Office, or both, with a view to establishing a factory in this country, using British material and British labour, for the manufacture of aeroplanes and engines for his Majesty's Government.

Colonel SEELY: The Prime Minister has asked me to answer this question. The answer is in the affirmative The matter is under consideration.

56. Mr. HUNT asked the Prime Minister whether his attention has been called to the statement of Captain von Pustau, the German naval aeronautical expert, to the effect that any of the German airships could sail to Ireland to-morrow without a stop, crossing Portsmouth and Plymouth on the way, and return by way of the Orkneys and Edinburgh; and that a fleet of airships under cover of night might not even have been sighted until after it had accomplished the task set it in time of war; and what steps the Government proposed to take to guard against this danger.

Mr. CHURCHILL: My right hon. friend has asked me to reply. The statements in question have been noticed, but do not appear to call for any special remark.

Mr. HUNT: Would the right hon. gentleman say why the Government allow our dockyards and shipyard towns to be exposed to a bombardment from the air without any power of retaliation?

Mr. CHURCHILL: No; not in answer to a question, sir.

Mr. HUNT: Does not the right hon. gentleman believe in retaliation, then?

Royal Flying Corps (Naval Wing).

68. Captain FABER asked whether British naval airmen will be allowed to compete for the "Daily Mail" waterplane prizes.

Mr. CHURCHILL: Whilst the competition has the full sympathy of the Board of Admiralty, it is not considered desirable for naval officers of the Royal Flying Corps to take part in it.

72. Mr. BARNES asked under what conditions of pay engine-room artificers are admitted to the Royal Flying Corps, and for what period are they expected to serve; are they expected to do passenger flights without additional remuneration; what opportunities are afforded them to obtain pilots' certificates; how long are they enrolled in the corps before being placed under instruction; and if protective clothing is provided at the expense of the Crown or at the expense of the individual.

Mr. CHURCHILL: Engine-room artificers are admitted to the Royal Flying Corps under the conditions laid down for that corps and are paid according to their qualifications—namely, at the rates of 9s. or 6s. per diem. This payment covers any passenger work required of them. Additional remuneration of 4s. or 2s. per diem is allowed if they become aeroplane pilots. They are required to volunteer for four years' service in the Royal Flying Corps, like other active service ratings. They are placed under instruction as soon as they arrive at the flying schools. Arrangements are being made for the supply of a sufficient amount of protective clothing on loan at the expense of the Crown.

WRITTEN ANSWERS.

Royal Navy Aircraft.

Lord CHARLES BERESFORD asked the First Lord of the Admiralty whether he is aware that, when he introduced the Navy Estimates, the German Government intended to expend several million pounds on aircraft immediately; and, if not, whether he intends to introduce a Supplementary Estimate with a view to increasing the number of British naval aircraft.

Mr. CHURCHILL: As the Prime Minister stated in the House in reply to the hon. member for Brentford on Wednesday last, all new facts arising after the presentation of the Estimates of the year which may affect the naval or military position are considered by the departments concerned, and any further action which is found necessary can and will be taken without delay.

Royal Flying Corps.

Captain FABER asked the Secretary of State for War what is the number of aeroplanes actually owned by the nation under War Office control capable of a velocity of 50 miles per hour at a height of 3,000 feet.

Colonel SEELY: The number is eighty-six.

The Monaco Hydro-Aeroplane Meeting.

BY C. G. GREY.



A view of the harbour at Monaco showing the mooring positions of the aeroplanes during the meeting.

Eliminations.

There is one thing the Frenchman, the Englishman, and most other people have in common, that is a firm belief in the idea conveyed in the phrase so common at theatrical rehearsals—"It'll be all right on the night." That is why people built aeroplanes on Salisbury Plain which never flew, and why people brought waterplanes to Monaco which could not possibly get off the water.

When I arrived here on Wednesday of last week I found that no one had passed all the eliminatory trials, although they had had a week in which to do it. Several had passed most of the tests, but others had not even started, and several of the best flying machines had been smashed up.

These smashes were the only real excitement up to that day. The first was Renaux's on the Maurice Farman-Renault. Why he did it no one knows, but apparently he tried to flatten out too quickly, something gave way, the machine hit the water too steeply and quietly turned over. The machine was too badly damaged to be worth repairing. Fischer's smash was due to a bolt holding a tail-boom and several wires shearing with the shock of alighting and letting the tail up as he steadied the machine on the water. When one has a Gnome of 160-h.p.—two 80-h.p.'s coupled—with fuel for six hours, one must be prepared for a bump on water. Everyone thought Fischer was also out of the hunt, but Mr. Holt Thomas, keen for the honour of the firm, induced Mr. Henry Farman to send down unlimited spares by express, and by working night and day Fischer was ready on Wednesday night to go out again.

The Deperdussin smashes on Monday were also highly instructive, all three being successfully smashed in an hour or two. First of all Prévost, one of the best fliers in the world, after a fine flight with full load, did a regular star landing, after a long glide, but flattened perhaps a foot too high up, and pancaked. As he did so his tail float hit a little roll on the water, and bang went the fuselage half way between the pilot and the tail. Somehow the machine remained balanced on its main floats and was towed in without further damage. On Wednesday it also was nearly ready for use again.

Then Janoir, on another Dep., tried to be a submarine, and landed at forty-five degrees. He vanished pretty completely, and the machine was hopelessly wrecked.

After him Devienne, who owns half a Dep. in partnership with Escoffier, made a beautiful "alighting," but one float hit a roll before the other, the float went pop like a paper-bag, and the machine fell over sideways. Fortunately little damage was done otherwise, and on Wednesday the Dep. crew were fitting new floats and chassis struts.

On the same day Labouret, on an Astra, with a horizontal Salmson engine, got up in the harbour mouth, apparently rose too steeply, "stalled" the machine, fell over sideways, and smashed the wings, the right float, and several chassis tubes. Apparently something has gone wrong with the design of the Astras since Labouret's magnificent performance at St. Malo last year. That machine had planes like a Wright, and with a 100-h.p. Renault, it flew as fast as Weymann's Nieuport. The three Astras at Monaco have a different wing section altogether, and do not seem inclined to do anything much. Even the one with the 100-h.p. Renault seems very sluggish. I found M. Frank Barra, who flew so well on an M. Farman in the European Circuit, and M. Hubert, formerly of Hendon, working like slaves to get a bit more power to make the Astras fly, but the results were not encouraging.

Some Points of the Machines.

I do not propose to do a "stand to stand" show report of the machines, but perhaps some general remarks may be of interest before going into details. The Astras, referred to above, are all tractor biplanes with two main floats and a tail float, arranged on the general lines originated in Com-

mander Schwann's Avro, and in the successful Short waterplanes.

The Morane-Saulnier is a biplane arranged much like a Henry Farman, with Tellier floats. She gets up nicely on her floats when once she gets going, but she is too heavy, and when fully loaded the floats are too deep in the water, and when she does get into the air she flies tail down. M. Gilbert flies her beautifully when alone on board, but at present she is not up to the requirements of a modern waterplane. There is also a little Morane-Saulnier monoplane, not in competition, on which M. Garros arrived unexpectedly on Wednesday morning from Beaulieu. It was his first trip on a waterplane, but his handling of her was superb. His landing was perfect, and later in the day he went out and did hair-raising performances over Monto Carlo and Cap Martin, making spiral dives apparently onto the Tir-au-Pigeons and into the Harbour at Monaco. The machine has two long Tellier floats, and being very light and fast she is about the most impressive machine of the lot to watch.

The Bréguets are very interesting. M. Moineau's machine has a big central float, a minor boat-shaped float half way along each lower plane, and a very small wing-guard float at each tip. M. Brégi's has two big floats which are sprung by rubber suspenders on the top of big steel struts leading up to and sliding in the fuselage, much as the skids are sprung in the Vickers' monoplanes. Both the machines fly really well.

The Nieuports, of M. Weymann and Dr. Espanet, are of the type seen at Olympia, with two "three-step" floats set wide apart. They get off the water beautifully, and some of the most experienced people regarded them as the most likely winners.

The Borels had not distinguished themselves up to Wednesday. The flying-boat designed by M. Denhaut, who built the original Donnet-Lévêque, steadily refused to get up onto the water, and simply wallowed. It is beautifully made, compared with the original, but something has gone wrong in the design. However, it is only an experiment, and will doubtless do well in time. The real disappointment is the 100 h.p. monoplane. We all know how well the 80-h.p. Borel flies—it is one of the best in the world. But apparently the mistake has been made of putting a nine-cylinder 100-h.p. Gnome into the same machine, with the idea that the extra 20 h.p. would easily account for the extra weight of engine and the added fuel. Unfortunately this extra weight sinks the floats so much that it is apparently impossible to get going through the water fast enough to hydroplane onto the surface, or to get up to flying speed so that the wings can lift. Once in the air she would probably be terrifically fast.

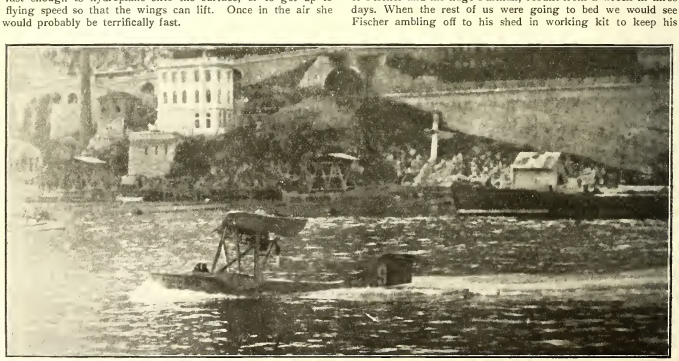
One of the most interesting machines is the de Marçay which M. Bielovucic is persuading to fly at intervals. One of the naval visitors describes it as being a cross between a Blackburn and an Antoinette, with a Bessonneau chassis—because the struts from the body to the floats are just like the stays of the big Bessonneau portable hangars. It is not a pretty thing, but it has the genesis of a great idea. Each wing is fixed to a big tube, which is upright but not vertical. These tubes are fixed in sockets so that the wings can swing round towards the back of the body. The lift and warp wires of each wing are all fixed to the lower end of its own tube, and the head resistance is taken up by a double cable running round pulleys in the bow to a wheel inside the body, which swings the wings back when required. With the wings folded the machine looks like a huge beetle. At present it has a 100-h.p. Anzani, which does not seem to be enough for the machine, or else the floats or wings are wrong, for I have not seen it flying up to to-day, though I am told it has flown.

April 10th.

Though there has been little flying to-day, everyone has been busy, and there have been some amusing incidents for onlookers, though not for constructors. During the morning the Astras were out, but could do no good, and in the afternoon Frank Barra made a final effort which broke a wing. His machine has a trick of turning suddenly to the right when it leaves the water, so he gives left rudder and warp directly he gets up. He puts it down to a crooked float, but others say it is the setting of the wing. Anyhow, this time he did the usual thing and the machine answered promptly, with the result that she did a left-hand dive and broke her left wing. I rather fancy that these Astras may now be given up as hopeless, and would be better altered back to the St. Malo type, which was uncommonly efficient. Barra and Hubert are inconsolable, and certainly it is hard luck on them. I gather that the root of the trouble is that too many designers have had a hand in the machines—the usual "too many cooks." I hope the Navy's nice new Astra, for which they have been so anxiously waiting, will be better than these, otherwise it will not get through the Admiralty tests as easily as certain British machines one could mention—and won't because this discourse deals with French machines.

Prévost, having finished rebuilding fuselage, came out and did the hoisting test, the last he had to do, having finished the rest before he smashed.

The chief interest of the afternoon was the re-appearance of Fischer and his huge Farman, rebuilt from a wreck in three days. When the rest of us were going to bed we would see Fischer ambling off to his shed in working kit to keep his



The Borel monoplane (Denhaut type) coming into harbour.

men going through the night, and everyone was delighted to see him out again to-day. His nagivation test round the motor boat course was quite comic, for there was a strong wind and he travelled most of the distance sideways to Cap Martin. As soon as ever he got round the course he went for the towing test. Then he started up and went to 1,000 feet or so, finishing with a lovely glide, hitting the water at the finish as gently as a waterfly. The concertina floats on this machine are evidently a great success, and people are finding that better chassis springs are wanted on water than on land. Finally, Fischer did the hoisting test, and so finished the lot inside an hour.

The complete list of machines now qualified for the Grand Prix are: Fischer's H. Farman, Gaubert's M. Farman, Weymann's Nieuport, Espanet's Nieuport, Brégi's Bréguet, Moineau's Bréguet, and Prévost's Deperdussin, and it does not look as if any others are going to qualify.

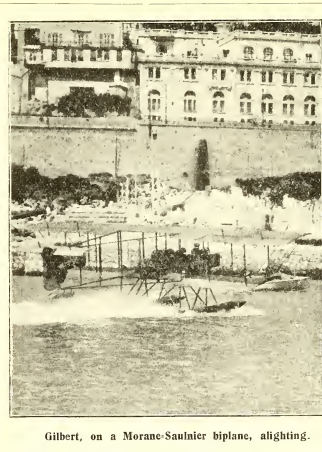
Late in the evening Chemet made a plucky effort to get the 100-h.p. Borel off the water with full load. All the morning M. Wild and his assistants had been busy fitting bigger wings, of a new type with curled up tips for stability. Chemet started gaily across the harbour, hauled the machine off the water in the harbour mouth, almost stalled her in the air in doing so, tilted to the right, warped to the left, and came down wallop, with dire results to the left wing and float. She came back with a rowing boat under the stump of the wing, and Chemet's mechanician sitting on the tip of the right wing to make some sort of balance on the right float. Everyone except M. Borel and Co. thought the performance very comic. However, Borel refuses to be beaten, and the crew set to work at once to fit the old wings and put in an ordinary 80-h.p. engine—another all-night job.

Just about the same time Garros turned out on the little Morane, which Mr. James Valentine—now descended to being a motor-boatist pro tem—tells me is Garros' height-record machine with floats on it. He amused himself flying up and down between Cap Martin and the turning point of the motor-boat course, but did not perform quite so much like an infuriated seagull as on the previous day. Espanet also came out on his Nieuport, flying low and fast, and Moineau took his Bréguét to about 2,000 feet and did a glorious glide. The Bréguets and the Farmans alight beautifully without any fuss, simply pancaking for a foot or two. The Nieuport pilots, however, fly onto the water as a rule, switching on and off.

Certainly "landing" on water is much more difficult than on land, and the opinion here seems to be that a pilot must be so placed that he can see his floats actually touch the water. The idea seems sound, for it is rather erbarrassing to alight on a surface which may jump up and meet you two or three feet too soon, or may fall away as much, let you drop, and then fall over on top of your floats. The machine stops almost dead as soon as it touches, so the pilot generally needs full elevator to avoid standing on his nose.

Which reminds me, I heard the "Wumards" of Renaux' smash to-day. Renaux had four of his mechanics on board and came down with the wind behind. As the machine stopped the nose dipped and the wind got under the tail which lifted slowly till the whole thing turned gradually over. The complete somersault took nearly five minutes, so slowly did she turn over, and the mechanics would have had plenty of time to climb out onto the tail and weight it down, but for the fact that the switch broke and it was impossible to stop the engine, and consequently no one could get out past the propeller till it was too late to do any good. An eye-witness told me that when she did finally decant her crew there seemed to be "dozens" of passengers swimming about.

To-night all those concerned with the waterplanes and "automobile canoes" were invited to a banquet given by M. Camille Blanc, the owner of the Casino, and generally the presiding genius of Monte Carlo. Everything was beautifully done and everyone enjoyed themselves hugely, in spite of the speeches, which were long and frequent. An impressive moment came when the venerable M. Fabre, the father of hydroplanes, rose to reply to a speech of M. George Prade's, and an hilarious one was when the entire British contingent, of a hundred or so, rose and drank the health of M. Blanc with what we



Gilbert, on a Morane-Saulnier biplane, alighting.

evidently imagined to be musical honours. On the hypothesis that music is the most expensive form of noise perhaps we were right. Thereafter many of the company, some five hundred in all, adjourned to the Casino, and later—or rather early next day—to the Sporting Club, where, I gather, some of them contributed liberally if involuntarily to the revenues of M. Blanc.

Friday, April 11th.

There has been comparatively little flying to-day, as the pilots of machines already qualified naturally took no risks of damaging their mounts by "joy riding." Most of them left their machines severely alone, and the others tinkered with their engines. Quite early Gilbert was out on the Morane-Saulnier biplane and passed his tests quite well, considering that the machine flies horribly tail down. His Rhône motor is called 63-h.p., so it comes somewhere about the class of the 70-h.p. Gnome, and by consequence his is the lowest powered machine in the competition. No one else qualified to-day, so that leaves eight competitors for the Grand Prix, five biplanes and three monoplanes, the Henry and Maurice Farmans, the two Bréguets and the Morane, the two Nieuports and the Deperdussin.

Chemet went out on the Borel, fitted during the night with its old wings, a new float, and an 80-h.p. engine, so that it became a standard machine exactly like those the Navy have had. He took Wild, the chief engineer, with him and taxied all the way to Mentone and most of the way back, the machine steadily refusing to fly, so he retired in disgust, consoling himself with the hope of winning the Schneider Cup next Wednesday. I can only assume that so much monkeying with different engines, wings and floats has put the whole machine out of truth, for all the rest of the series fly excellently. Altogether the Borel luck seems out.

The Astra crew are now quite resigned to their fate and have become interested spectators. The Artois people have also retired gracefully, "Bielo" has left the de Marçay alone all day and has not passed any of the flying tests. Devienne had his machine rebuilt to-day but did not fly, and Janoir's Dep. has simply remained a wreck not worth repairing, and that is the lot.



M. Garros taxying on a Morane-Saulnier monoplane.

The only other flying besides Gilbert's was done by Garros and Espanet, who went out early to qualify for the Schneider Cup Race on Wednesday next. The tests entail being towed for six kilometres, flying forty more, and being towed another six. Garros did his in his usual beautiful style, and Espanet flew as well as ever, but I did not see him being towed afterwards, though presumably he did it all right. The Schneider Cup is given by M. Jacques Schneider, a wealthy young sportsman who is himself a certificated aviator. The race is between teams representing America and France, but Weymann is the only American. Three are allowed in each team, so presumably Chemet will be the third if he can induce the 160-h.p. Borel to fly.

This machine is much like the ordinary 80-h.p. Borel, but the wings have a much bigger angle of incidence at the tips than near the butt, so it should be fairly tricky to control, even if highly efficient.

One thing that strikes an observer is the difference between the methods of conveying the machines to and from the water. Most firms are content with a primitive trolley made of two wheels with a platform between on which the floats rest. Some firms have a separate trolley for each float. The Nieuports have a neat two-wheeled carriage made to fit the central fore and aft tube of the chassis. This is held in place by wires and strainers, the wheels are shod with non-skid motor tyres with steel studs, and when once this is locked in place the machine is ready for the roughest possible land journey. At the opposite extreme is the Morane-Saulnier, which is simply carried into the water by willing hands.

Methods of coming to land are equally diverse. Some pilots stop well out in the harbour and are towed in. At the opposite extreme was Chemet's method. He simply taxied right in, turned square with the floating landing stage, and loosed his engine right out, so that he slid up the stage almost to the edge of the quay.

The Lesson of the Grand Prix.

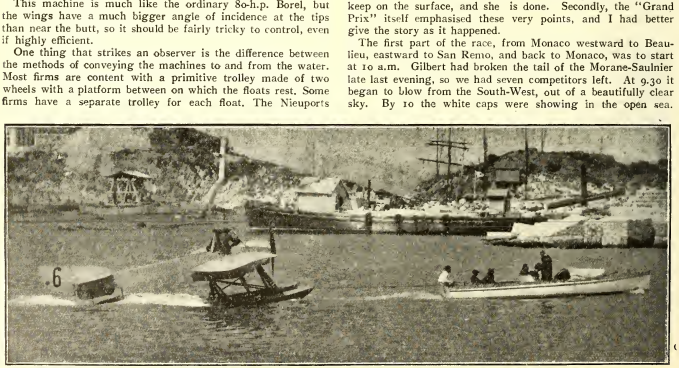
April 12th (Saturday).

To-day we have had a lesson worth thousands of pounds, and it has probably cost several thousands to learn it. That lesson is that there are only two ways of making seaworthy waterplanes. One is to make them so big and strong and powerful that they will stand any sea, and the other is to make them so light and powerful that they will come right off the top of the first wave. In both cases power is the thing. Make the machine as efficient as possible, so as to utilise the power to the best advantage, make everything strong, and put in enough power to drag the whole thing out of the water like drawing a cork.

You can design hydroplane floats till the floats get off calm water by themselves, but even then they will be useless when they are under water, or slamming head first into a sea. The float for sea work is not the one that gets off best, but the one that pulls out easiest. And after that the best float is the one that offers least head resistance when flying. This is how we here learned the lesson.

In the first place, as Mr. Louis Coatalen pointed out to me, walking down the pier to see the start for the "Grand Prix," the little sea there has been this week has shown him that a hydroplane boat is not so good as a displacement boat if there is any sea running. The Despujols hydroplane with his Sunbeam engines in it was pulled up every time she hit a wave, so that the 2,400 r.p.m. of the engines were shut down promptly to 1,400 r.p.m., while a displacement boat ploughs steadily through it all. Nothing has touched the pace of "Ursula" in a sea, and "Ursula" is a displacement boat. Once let a hydroplane get into a sea so big that she cannot keep on the surface, and she is done. Secondly, the "Grand Prix" itself emphasised these very points, and I had better give the story as it happened.

The first part of the race, from Monaco westward to Beaulieu, eastward to San Remo, and back to Monaco, was to start at 10 a.m. Gilbert had broken the tail of the Morane-Saulnier late last evening, so we had seven competitors left. At 9.30 it began to blow from the South-West, out of a beautifully clear sky. By 10 the white caps were showing in the open sea.



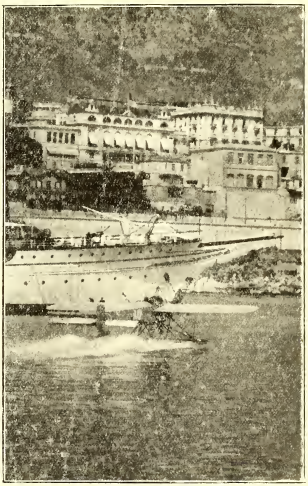
Towing Dr. Espanet's Nieuport monoplane out of the harbour.

Fischer was the first starter, going full speed out of the harbour mouth, and was off the water with the wind behind a few yards farther on. He swung round to the right and disappeared round the Monaco headland. Gaubert, on the Maurice Farman, followed in very similar style. Then came Weymann's Nieuport. The pilot taxied well out beyond Monte Carlo, and came tearing back head to wind. After three or four bangs on the crests of waves he got right up and away. Brégi was the next starter, but to our surprise, instead of setting his engine going, he simply drifted down wind in fairly still water, across the Monte Carlo bay. When quite near shore he started up his motor and flew off with comparative ease. While he was drifting out Dr. Espanet on the second Nieuport came out. He tried to do as Weymann did, but in the few minutes between them the sea had got worse, and after a plucky fight the machine flopped over to the left and began to run round in a circle. Then we saw that the chassis and float on the left had gone wrong. Espanet made for the smoother water under shelter of Monaco and was soon towed in by a motor-boat.

Moineau, on his big six-float Bréguet, who came next, gave us the sensation of the day. He taxied well out into the open, turned head to wind, and charged straight at it. The sea was quickly getting worse, and, standing where I was a few feet above sea level, the whole machine, except the upper plane, disappeared into the trough of the waves time after time. Then, as he gathered speed, he began to jump from crest to crest, smashing through the waves by sheer engine power amid clouds of spray. The French torpedo-boat sent out in case of accident was taking it green over the bows as she followed in Moineau's wake. Then, with a magnificent leap the Bréguet burst clear of the water and soared up and away.

Prévost, the last starter, gave an equally fine show on the Deperdussin, tearing through the solid water, leaping from wave to wave as he gathered way. Then at last he was tossed high by a big wave and we thought he was clear, when, to our surprise, he switched off and came down a fearful bang on the water. He turned round, and his passenger climbed out onto a float to examine something. Then he climbed back, the engine was started, and they came into the harbour, cutting the motor in and out. Later I learnt that just as they fought clear of the water, Prévost felt his engine vibrating, and on examination his passenger found the propeller tip in its brass casing was twisted half round by the last wave.

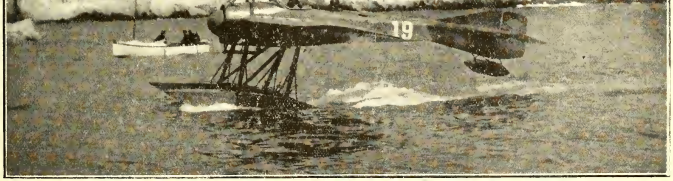
By this time the others were due back from Beaulieu, where they had to alight, but as none of them appeared, some of us climbed to the top of the Cap to look for them. We had just got there when Moineau came tearing past at well over 100 miles an hour, but nothing else was in sight. On returning to the harbour we heard by phone from Beaulieu that Fischer and Weymann were wrecked, Gaubert was on the rocks, and



The Borel monoplane (piloted by Chemet) starting.

Brégi was sheltering in the harbour there, so off we went to Beaulieu. There we found Fischer's machine a tangled wreck. He had hit heavily on alighting, after being twisted round and round by a tourbillon over Cap Ferrat, broken something, and the sea had done the rest. Mr. Holt Thomas had told me several days before that he had no doubt about Fischer getting off, but that the machine was such a huge experiment that he had grave doubts about it coming down safely—and he was only too right.

Weymann had alighted safely, but in getting off a twisting gust threw him back onto his tail, the fuselage broke just be-



Prévost (Deperdussin) returning to harbour.

hind the pilot's seat, and the whole thing rolled over backwards. Weymann and his passenger climbed out on to the wings, and as they did so she rolled completely upside down and they got another ducking. The wreck apparently floated on its tanks, for the wings were punctured and the floats were out of the water when we found it in harbour. Gaubert and Brégi landed safely, but got such a buffeting that Gaubert taxied across the Baie des Fourmis and sheltered under the lee of a mansion on the edge, while Brégi came into harbour and stayed there.

Then we came back to Monaco, and heard that Moineau had got to San Remo safely, alighted there, and was starting back when he did much the same thing as Prévost had done earlier in the week, and Weymann earlier in the day—broke the back of his fuselage.

So here we are with the course uncompleted, two undamaged machines at Beaulieu, two repairable machines at Monaco, and another at San Remo, and a gale blowing out of a lovely blue sky on a nice warm summer day.

And the net result is that we know it was pluck, skill, and power, especially power, that brought Moineau so far, and that with more power and a stronger machine he would have done the whole course.

Later I learned that Moineau came down in the exposed bay at San Remo, but owing to the sea could not make the harbour. He taxied about for a quarter of an hour, mostly under water, and then broke the machine in getting off. A steamer tried to tow him in, but it also was unable to get into the harbour with the wreck in tow, so Moineau and his passenger were rescued and the machine was left to its fate.

At the moment of writing I cannot learn whether the great 200-h.p. Canton-Unné was rescued or not, but it certainly deserved to be. It has been a great day for the Canton-Unné, for the two survivors at Beaulieu. Gaubert's Farman and Brégi's Bréguet, have this engine, as well as Moineau's machine.

The latest news one can gather is that Moineau is to have a prize of 13,000 francs for his fine effort, that the four who got to Beaulieu are each to have 5,000 francs or so, and that a special race is to be got up on Monday or Tuesday for the four surviving machines, those of Gaubert, Brégi, Prévost, and Espanet. Also it is announced that the official anemometer at the Monaco observatory gave the wind speed at the time of the race as 25 metres per second, which is about 50 miles an hour, so no wonder there was trouble.

Sunday, April 13th.

The Committee have now decided to allot the prizes as follows:—Moineau, 13,000 frs. (£520), for his fine performance, and 3,000 frs. each to MM. Fischer, Gaubert, Weymann, and Brégi. That accounts for half the prize-money. The other half is to be put up for another race on Tuesday under the same conditions as Monday's race should have been. This will be open to the survivors of yesterday. The prizes are—12,000 frs. to the first, and 6,000, 4,000 and 3,000 to the next three. It does not seem a fair arrangement, because one of the two who never got away at all, either Prévost or Espanet, is sure to win it if the weather is calm. I hope to give an account of the happenings next week.

The Radley-England Hydro-Aeroplane.

On April 9th Mr. England took the machine out for a trial. This was a great success, as will be realised when it is stated that with two passengers up, and with two of the three 50-h.p. Gnomes running, the machine flew at a speed of about 60 m.p.h. The flight lasted about twenty minutes, during which time the balance and general air-worthiness of the craft appeared to be excellent. The three Gnomes are mounted on the same axis, and drive the propeller shaft—at a reduced speed—by means of three chains. Clutches have not been employed since their advantages are not considered to compensate for the extra weight and complication involved; it follows, therefore, that the working unit or units have not only to drive the propeller (which, by the way, is four-bladed), but also to rotate the "resting" units or unit, a circumstance which makes the speed attained during this trial all the more remarkable.

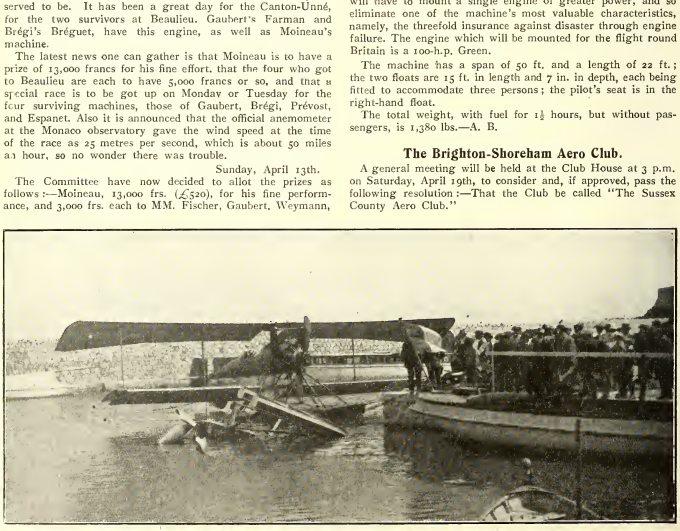
It seems a pity that the conditions of the "Daily Mail" competition do not permit this unique power plant to be mounted, for, as there is no British 50-h.p. engine that lends itself, as does the Gnome, to this particular arrangement, the builders will have to mount a single engine of greater power, and so eliminate one of the machine's most valuable characteristics, namely, the threefold insurance against disaster through engine failure. The engine which will be mounted for the flight round Britain is a 100-h.p. Green.

The machine has a span of 50 ft. and a length of 22 ft.; the two floats are 15 ft. in length and 7 in. in depth, each being fitted to accommodate three persons; the pilot's seat is in the right-hand float.

The total weight, with fuel for 1½ hours, but without passengers, is 1,380 lbs.—A. B.

The Brighton-Shoreham Aero Club.

A general meeting will be held at the Club House at 3 p.m. on Saturday, April 19th, to consider and, if approved, pass the following resolution:—That the Club be called "The Sussex County Aero Club."



M. Bregi's Bréguet sheltering at Beaulieu. The wreck of M. Weymann's Nieuport is in the foreground.

Exhibitions at Hendon.

On Saturday afternoon three of the finest pilots yet produced, namely, Messrs. Chevillard, Verrier, and Hamel, afforded to those members of the British public who were interested enough to take, it, an excellent opportunity of comparing their methods. Unfortunately, M. Verrier's engine was not in the pink of condition, and so his flights were hardly typical. But M. Chevillard was at his worst, pirouetting above the heads of his spectators in a manner so genuinely alarming that involuntary expressions of one sort and another were forced from the lips even of the most reserved.

The photographs of M. Chevillard in action, disturbing though they are, convey but little of the appalling actuality, for they cannot show the extraordinary suddenness of his movements, wherein lies the greatest difference between his performance and that of Mr. Hamel, whose banking, dangerously steep though it appears, always takes place at a reasonable rate.

During the afternoon Mr. Hamel flew over to Bushey with Miss Trehawke-Davies, and after his return gave a beautiful exhibition flight, involving a game of leaptrog across the aerodrome, and a race with a Midland express.

Sunday turned out a practically perfect day for flying, Mr. Hamel left for Brooklands early in the afternoon, whence he left for Brighton later. Shortly afterwards Mr. Hawker arrived on the Sopwith-Wright biplane from Brooklands, having previously made a landing at Wormwood Scrubbs. In the aerodrome there was plenty of flying. M. Chevillard, on the Henry Farman, was as usual doing his hair-raising spiral dives, while M. Verrier, on the Maurice Farman biplane, did not leave one cold. Both Mr. Noel and Mr. Manton were out testing the new 80-h.p. Grahame-White biplane. Mr. Hawker was doing sharp turns and switchbacks. The Caudrons were up the whole afternoon. Mr. Turner took up numerous passengers on the 60-h.p. Caudron. Mr. Baumann made a long and high flight over the surrounding country on the efficient little 35-h.p. machine. Mr. Temple was also out during the afternoon. Later in the afternoon Mr. Cheeseman flew the 35-h.p. Anzani Grahame-White Blériot, while Mr. Grahame-White himself went to Bushey with Mr. Chevillard. The crowd was undoubtedly the largest seen up at Hendon this year, and they had their money's worth.

A Colonial Statesman's Celestial Experience.

The Hon. W. A. Holman, Attorney-General of New South Wales, visited the military aviation ground at South Farnborough on Thursday last and was shown over the buildings by Major Sykes. Later on he was taken up in a new Bréguet biplane by Capt. Shepherd to a height of 1,000 ft. He described himself as deeply impressed by the military possibilities of the machine, commenting upon the ease and clearness with which the country could be observed.

Accidents to MM. Collardeau and Valazzi.

At Hendon on Friday last a Bréguet biplane, piloted by M. Collardeau, turned a complete somersault on landing. M. Collardeau's helmet probably saved his life, for he was thrown out on his head, but, fortunately, sustained nothing worse than a severe shock.

Later on during the afternoon M. Valazzi in a Deperdussin monoplane sideslipped at a height of 100 feet. Happily, the fall was broken by a tree, through whose branches M. Valazzi was let down, somewhat roughly, into a pond twenty feet deep. By these fortunate coincidences, he escaped with a bad shaking.

Coast Flight by Mr. Hamel.

Mr. Hamel with Miss Trehawke-Davies as passenger flew from Shoreham to Dover on Monday last, covering the 74 miles in 63 minutes. At Brighton, Eastbourne and Hastings he came down almost to the water in spiral glides. At one point he flew five or six miles out to sea in order to avoid cliff eddies. Approaching Dover at a height of 3,000 ft. he planed down and made a few circuits over the harbour, and then flew to the aerodrome.

The Late Mr. Percival Spencer.

Mr. Percival Spencer, the well-known aeronaut, died at his residence in Highbury on Friday last, death resulting from bronchial pneumonia. Mr. Spencer, who was 49 years of age, was the son of the late Mr. Charles Green Spencer, also a well-known balloonist. Mr. Spencer began his aeronautical career at the age of eight, and since that time he has made ascents in almost all parts of the world.

In 1890, during the war in Sumatra, he was with the Dutch army, and rendered aid to his side by the observations he and Major Droese were able to make from a captive balloon.

The Mansion House Meeting.

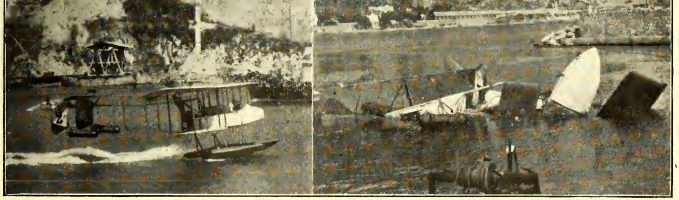
A conference convened by the Aerial Defence Committee of the Navy League to make the necessary arrangements for the Mansion House meeting on May 5th, to impress on the country the urgency of making adequate preparation for aerial defence, took place on Monday afternoon last.

A letter from the Lord Mayor, making certain suggestions with reference to the meeting, was received, and a large volume of correspondence supporting the Committee's proposals was dealt with. The text of the resolutions was agreed upon.

Strong expressions of approval have been received from all parts of the country and from public men of every political complexion.

The Death of M. Gaudart.

As this paper goes to press, news comes from Monaco that M. Gaudart has met his death. On Tuesday morning it appears that, disregarding the official prohibition which had been issued on account of the bad weather, he took up the d'Artois hydro-aeroplane, and, after a short flight, side-slipped to the left, opposite the "Tir-au-Pigeons," and fell into the sea. The pilot was drowned.



M. Fischer's Henry Farman biplane starts and finishes in the Grand Prix Race.

The Week's Work.

MONDAY, April 7th.

R.F.C., Central Flying School.—Strong northerly wind. Bumpy. Dull. On Maurice Farman 420, Lieut. Longmore 35 mins.

R.F.C., Farnborough.—Weather calm and bright. Maurice Farman 305, Lieut. Gould 16 mins; Lieut. Atkinson 23 mins, taking Capt. Musgrave, 5 mins alone; Capt. Board 25 mins; Capt. Musgrave 23 mins rolling; Capt. Reynolds 5 mins. B.E. 201, Capt. Beatty 30 mins; Major Raleigh 45 mins. Bréguet 211, Sergt. Hunter 15 mins; Capt. Beor 10 mins; Capt. Shepherd 30 mins; Lieut. Wanklyn 10 mins; Major Raleigh 10 mins.

Salisbury Plain (Bristol School).—Messrs. Pixton and Jullerot made flights in gusty wind.

TUESDAY, April 8th.

R.F.C., Central Flying School.—Freshening N. to N.E. wind. Dull. On Avro 430, Major Fulton 5 mins, with Capt. Tucker 25 mins, with Lieut. Bowhill 25 mins; Lieut. Ross 25 mins; Lieut. Oliver 20 mins; Major Gerrard 8 mins. On Maurice Farman 411, Air Mechanic Collis 5 mins. On Maurice Farman 418, Lieut. Warter 90 mins. On Maurice Farman 427, Lieut. Holt 25 mins.; Lieut. Bigsworth 53 mins. On Maurice Farman 431, Lieut. Glanville 39 mins; Lieut. Vernon 63 mins. On B.E. 416, Capt. Salmond 16 mins; Lieut. Boyle 55 mins. On B.E. 417, Lieut. Dawes 29 mins.; Lieut. Thompson 10 mins; Lieut. Marix 16 mins; Lieut. Harvey 10 mins; Capt. Salmond with Petty Officer Grady 12 mins. On Short 402, Major Gerrard with Sergt. Wright 7 mins, and 13 mins alone; Sergt. Wright 35 mins; Lieut. Littleton 20 mins.

R.F.C., Farnborough.—Maurice Farman 305, Lieut. Atkinson 18 mins; Capt. Board 26 mins; Lieut. Gould 17 mins; Capt. Dawes 15 mins, taking Capt. Musgrave, 15 mins alone; Capt. Pigot 10 mins.

B.E. 201, Capt. Beatty 75 mins; Major Raleigh 25 mins; Capt. Beatty 10 mins; Lieut. Waldron 90 mins. Bréguet 211, Capt. Shepherd 13 mins, 10 mins with passenger, Mr. Hoffman; Sergt. Hunter 10 mins, taking Mechanic Jerrard; 5 mins alone; Capt. Beor 8 mins; Lieut. Wanklyn 6 mins.

M. Collardeau arrived on 212 Bréguet from Hendon. Mr. Gordon Bell testing H. Farman for R.A.F. B.E. 206, Capt. Beatty 20 mins; Lieut. Smith-Barry 20 mins.

R.F.C., Montrose.—Capt. Longcroft with Sergt. Mullins as observer on B.E. extended flight. Major Burke on B.E., Capt. Becke on B.E., short aerodrome flights. Capt. Herbert on Maurice Farman

Brooklands.—At Howard Flanders School, Raynham flying biplane for ½ hour at 6.30. Took Dukinfield-Jones up to try and diagnose peculiar sound emanating from engine. Inexplicable, so took engine down.

At Vickers School, Mr. Waterfall straights on biplane, with Messrs. Barnwell and Knight alternately in passenger seat. Mr. Blatherwick on No. 3 mono.

At Bristol School, at 5.15 a.m. Mr. Merriam out for test, then taking Mr. Grey for high flight, Mr. Strain afterwards for first trip. Mr. Bendall out for test on another machine, then handing same over to Lieuts. Morgan and Peirse, who made straights. Mr. Bendall with Lieut. Cogan and Messrs. Grey and Strain. Lieut. Edward MacClellan out with Mr. Merrium as passenger. Lieuts. Broder and Cogan also out. Lieuts. Morgan and Peirse straights. Mr. Bendall with Lieut. Broder and Mr. Merriam alone.

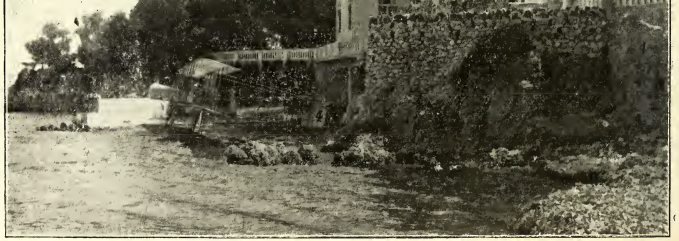
Salisbury Plain (Bristol School).—M. Jullerot for tests with Mr. Tod in monoplane. Later Lieut. M. R. Chidson and Mr. R. Marshal (new pupils) given first flights by Jullerot. Colonel Vives-y-Vych, Chief of the Spanish aviation Department with M. Jullerot on Bristol side-by-side mono for flight. Mr. Pixton giving first trip to Mr. Gipps (new pupil), then took new Bristol tractor biplane for first trip and found machine excellent flyer. M. Jullerot took Lieut. Bromet in side-by-side mono, and then with Mr. Thurstan in biplane. M. Jullerot with Lieuts. Bromet and Chidson and Mr. Marshall. Mr. Eric Harrison gave long flight to Lieut. Bromet, Mr. Pixton taking Lieut. Chidson.

Windermere.—Lakes Flying Co. Mr. Stanley-Adams took "Water Hen" out with Mr. Bland (pupil).

Liverpool (Waterloo).—Mr. Melly testing school Anzani after overhauling engine, and did several straights.

WEDNESDAY, April 9th.

R.F.C., Central Flying School.—Fresh N.E. wind. Dull. On Avro 430, Lieut. Oliver 9 mins to Lark Hill and 17 mins back; Lieut. Ross, Lark Hill and back 26 mins; Lieut. Roupell 13 mins; Leading Seaman Marchant 10 mins; Major Fulton with Capt. Tucker 30 mins, with Lieut. Bowhill 30 mins; Lieut. Bowhill 5 mins straights. On Maurice Farman 418, Major Gerrard 10 mins; Lieut. Conran 20 mins. On Maurice Farman 425, Engr. Lieut. Randall 15 mins alone, with Air Mechanic Benyon, for maiden trip, 25 mins; Major Trenchard 18 mins; Master Mechanic T. O'Connor 10 mins; Air Mechanic Higginbottom 8 mins; Asst.-Paymaster Lidderdale 15 mins alone, with Chief Mechanic Pack 12 mins. On



M. Gaubert's Maurice Farman sheltering at Beaulieu.

Maurice Farman 427, Lieut. Arthur 50 mins; Lieut. Soames 16 mins; Lieut. Small 27 mins; Lieut Glanville 21 mins; Lieut. Holt 23 mins; Lieut. Conran 33 mins. On Maurice Farman 429, Lieut. Longmore 42 mins. On Maurice Farman 431, Capt. Mellor 70 mins; Lieut. Conran 12 mins; Capt. MacDonnell 35 mins; Lieut. Vernon 32 mins; Lieut. Bigsworth 18 mins. On B.E. 416, Capt. Salmond 7 mins. On B.E. 417, Capt. Salmond 18 mins alone, with Petty Officer Grady 22 mins; Lieut. Boyle 22 mins; Lieut. Thompson 34 mins; Lieut. Harvey 9 mins; Lieut. Marix 16 mins; Lieut. Dawes 11 mins. On Short 402, Capt. MacDonnell 30 mins; Sergt. Vagg 10 mins; Major Gerrard with Leading Seaman Ashton 5 mins; Leading Seaman Ashton 20 mins.

R.F.C., Farnborough.—Maurice Farman 305, Capt. Reynolds 5 mins; Capt. Musgrave 27 mins rolling; Capt. Board 10 mins; Lieut. Gould 14 mins; Lieut. Atkinson 7 mins; Capt. Dawes 10 mins; B.E.201, Major Raleigh 30 mins; Lieut. Waldron 20 mins; Sergt. Bateman 10 mins, rolling; Lieut. Smith Barry 15 mins; B.E. 206, Capt. Beatty 20 mins; Lieut. Smith-Barry 10 mins.

R.F.C., Montrose.—Lieut. McLean 1 hour's duration flight at 2,000 ft. on Maurice Farman. Lieut. Pepper flight on Maurice Farman. Capt. Herbert with Air Mechanic Still as observer on Maurice Farman. Capt. Becke with Air Mechanic Reid on B.E., Capt. Becke with Sergt. Gillings, on B.E., Lieut. Lawrence four flights on B.E. Capt. Longcroft on B.E. at 6,000 ft., practising vol planing and spiral descents.

Hendon.—At Temple School, Mr. G. L. Temple on Caudron for 30 mins. Wind blowing to 24 m.p.h.

At Grahame-White School, Mr. T. Bayetto practising on No. 2 Blériot, followed by Mr. R. H. Carr on No. 7 biplane with Mr. Cheeseman. Mr. Major also doing straights with Instructor on No. 7.

At W. H. Ewen School, Mr. L. W. F. Turner two test flights on 35-h.p. brevet Caudron. Too gusty for pupils. During evening Mr. Turner doing exhibition work on 60-h.p. Caudron and 35h.p. Caudron. M. Baumann also on 35-h.p. Caudron No. 2, rising over 1,000 ft. and finishing with long glide. Lieut. G. Adams on same machine rolling.

At Deperdussin School.—Lieut. Porte flew in one hour against the wind to Eastchurch on new 80-h.p. Anzani-engined Admiralty machine. Lieut. Bourke straights. Mr. Barron rolling on No. 2.

At Blériot School, Mr. R. Desoutter out on No. 3 circuits.

Willows Aircraft School.—Ascent made from grounds of Old Welsh Harp, Hendon, at 5 p.m. Three pupils—Mr. H. Barber, Capt. Bernal, and Mr. R. W. Crocker—with Mr. E. T. Willows, ascended in a 50,000 cubic ft. balloon. With light N.E. wind a course was made over Willesden, Acton and Richmond Hill. Descended Epsom 6.30 p.m.

Brooklands.—At Vickers School, Mr. Barnwell and Lieut. Blatherwick on biplane, then Mr. Knight and Mr. Waterfall. Lieut. Blatherwick on No. 3. Mr. Knight on No. 3 landing heavily and breaking propellor. Messrs. Barnwell and Knight on No. 3 testing new propeller. Lieut. Blatherwick on No. 3; Mr. Barnwell on biplane with prospective pupil, then with Messrs. Waterfall and Wight in front seat; also Mr. Knight with same two pupils.

At Bristol School Mr. Merriam up for test, taking Mr. Grey as passenger, and then Mr. Strain; Mr. Bendall out for test on another machine, then with Lieut. Cogan and Mr. Strain. Lieut. Morgan and Peirse circuits. Mr. Grey up with Mr. Merriam. Mr. Merriam with Lieut. Edward MacClellan on several straights. This pupil then out for straights.

Salisbury Plain (Bristol School).—M. Jullerot with Mr. Gipps on biplane and on monoplane to Mr. Marshall; Lieuts. Chidson and Bromet and also to Mr. Tod. Mr. Pixton on biplane with Lieuts. Chidson and Bromet, and Messrs. Marshall and Gipps. Messrs. Pixton and Jullerot both out on new Bristol tractor. Mr. Tod on monoplane.

Liverpool (Waterloo).—Mr. Melly out on "V" Anzani doing figures of 8, testing machine after fitting additional tank.

THURSDAY, April 10th.

R.F.C., Central Flying School.—Freshening N.E. wind. Dull. On B.E.417, Capt Salmond 8 mins, a very rough trip.

R.F.C., Montrose.—Capt. Becke with Sergt. Jellings to Dundee on B.E. Capt. Longcroft with Lieut. P. B. Joubert de la Ferté to Arbroath on B.E., dropping messages to despatch-carrying motor cyclist. Lieut. Lawrence on B.E. Capt. Herbert, Lieut. McLean and Lieut. Pepper all on Maurice Farmans.

Brooklands.—At Howard Flanders School. Engine tests. Raynham out testing both straights and circuits.

At Vickers School, Messrs. Barnwell and Knight on biplane. Mr. Barnwell testing No. 5 mono with new wings.

At Bristol School, Mr. Merriam with Mr. Grey. Mr. Bendall out with Lieut. Broder; Lieut. Edward MacClellan straights; Lieut. Cogan straights having Merriam as passenger. Mr. Merriam with Lieut. Cogan; Mr. Bendall with Mr. Strain.

Windermere.—Lakes Flying Co. Mr. Stanley-Adams out on "Water Hen" with Mr. Bland (pupil).

Dover.—Mr. Hamel on new 80-h.p. Blériot making further tests, with Miss Trehawke-Davies as passenger, and later took two more passengers, flying over naval harbour.

FRIDAY, April 11th.

R.F.C., Central Flying School.—Slight S.E. wind. Very dull. Wind freshening to almost gale and heavy fog-banks rolling up with plenty of rain after 10 a.m. On Avro 430, Major Fulton 5 mins, with Ldg. Seaman Marchant 12 mins; Ldg. Seaman Marchant 8 mins; Lieut. Conran 20 mins; Lieut. Roupell 20 mins circuits, with Air Mech. Reeves 20 mins over Tidworth and Lark Hill, etc., then starting from school alone 9.30 for Whitchurch. On return journey lost in fog, landed at Burcombe Downs, near Salisbury; weather too bad for return, so machine left under farm shed. On Maurice Farman 411, Lieut. Longmore with Sergt. Robbins 60 mins, with Air Mech. Savill 35 mins; Air Mech. Collis 5 mins; Sergt. Kemper 13 mins; Air Mech. McNamara 35 mins. On Maurice Farman 418, Major Gerrard 5 mins, with Lieut. Read 20 mins, with Sergt. Vagg 10 mins; Lieut. Littleton 45 mins. On Maurice Farman 425, Major Trenchard with Air Mech. Gallie, S., 8 mins for maiden trip, with Air Mech. James 8 mins; Engr.-Lieut. Randall with Air Mech. James 22 mins; Asst.-Paymr. Lidderdale with Air Mech. Gilbert 15 mins for maiden trip; Air Mech. Higginbottom with Air Mech. Smith 8 mins, maiden trip. On Maurice Farman 427, Lieut. Vernon 15 mins; Lieut. Small 13 mins; Capt. MacDonnell 5 mins; Lieut. Glanville 25 mins; Lieut. Unwin 17 mins; Lieut. Soames 25 mins. On Maurice Farman 429, Air Mech. Collis with Petty Officer Hogan 50 mins; Lieut. Conran 50 mins alone, with Telegraphist Stirling 40 mins. On Maurice Farman 431, Lieut. Glanville 24 mins; Capt. Mellor 18 mins. On B.E. 416, Capt. Salmond 20 mins; Lieut. Boyle 9 mins; Lieut. Thompson 45 mins; Lieut. Dawes 30 mins. On B.E.416, Capt. Salmond with Petty Officer Grady 5 mins; Lieut. Dawes 20 mins; Lieut. Marix 55 mins; Lieut. Harvey 24 mins; Lieut. Boyle 16 mins. On Short 402, Major Gerrard with Ldg. Seaman Ashton 5 mins; Ldg. Seaman Ashton 10 mins and then flew for brevet; Major Gerrard with Ashton 3 mins back to sheds, with Sergt. Wright 5 mins; Sergt. Wright then for brevet; Major Gerrard with Sergt. Wright 5 mins back to sheds; Capt. MacDonnell 30 mins; Lieut. Rathborne 20 mins.

R.F.C., Montrose.—Capt. Becke, Capt. Longcroft and Lieut. Lawrence short flights on B.E. machines. Lieut. Martyn on Maurice Farman. Flying stopped by snowstorm.

Hendon.—At Temple School, under Mr. Temple, Messrs. Vaile and Lance 20 mins rolling on Blériot.

At Grahame-White School, Mr. R. H. Carr straights on No. 7, afterwards doing circuits with Mr. Cheeseman. Mr. Major straights with Mr. Noel, later flying alone on No. 7. Mr. Manton rolling on Blériot 2, later straights on No. 4 Blériot.

At W. H. Ewen School, Mr. Turner test flight on 35-h.p. Caudron No. 1. Messrs. Torr, Stewart, and Zubiaga straights on 35-h.p. Caudron. Mr. Warren on same machine. M. Baumann on the 35-h.p. Caudron No. 2 for test. Messrs. Pendlebury and Goodden straights on No. 2. Later all above again out, including Lieut. G. Adams and Mr. Prosser, rolling on No. 2. Mr. Turner on the 60-h.p. Caudron.

At Deperdussin School, Mr. Spratt on 35-h.p. school 'bus. Lieut. Bourke and Mr. Bauman straights. Latter on No. 3, broke wheel on turning, and after charged No. 2, broke empanage of that 'bus, afterwards straights on No. 3. Mr. Barron rolling, hops and straights. Mr. Valazzi out on 35-h.p. school machine. He climbed sharply on turn, stalled little 'bus, and came to earth. Smashed machine but was unhurt.

At Bleriot School, M. R. Desoutter and Mr. Reilly several good circuits. Mr. Clappen at 100 ft. on No. 3 doing circuits. Mr. Williams on No. 1 rolling.

Brooklands.—At Howard Flanders School. Raynham out at 7-45 for 20 mins. Engine too rich, so in for adjustments. Afterwards out for ½ hour, finishing with long straight glide.

At Vickers School, Messrs. Wight and Waterfall alternately with Mr. Knight as passenger. Mr. Wight circuits. Capt. Wood on No. 5 monoplane, and school biplane.

At Bristol School, Mr. Bendall with Mr. Strain. Mr. Grey straights. Lieuts. Peirse and Morgan figures of eight. Merriam with Lieut. Morgan and then Lieut. Broder and Mr. Strain with Mr. Bendall. Lieut. Cogan was away for straights, having both Mr. Bendall and Mr. Merriam as passengers. Mr. Merriam gave Lieut. Hosking (new recruit) first flight. Lieut. Edward MacClellan straights.

Salisbury Plain (Bristol School).—Mr. Pixton with Lieut. Chidson and Messrs Marshall and Grey. Later on new Bristol tractor.

Dover.—Mr. Hamel with Mr. Dupree as a passenger left Dover about 9 a.m. in perfect weather on the 80-h.p. Blériot and made his thirteenth crossing with a passenger. He flew to Dunkirk and back without a stop (120 miles in about an hour and threequarters). A naval biplane arrived at Fort Burgoyne during morning and shortly afterwards returned.

SATURDAY, April 12th.

R.F.C., Central Flying School.—Strong N.E. wind all forenoon. Dull. Wind dropped off considerably and weather much brighter in afternoon. On Avro 430, Lieut. Roupell from Burcombe Downs back to school, about 20 mins. On B.E.417, Capt. Salmond with Air Mechanic Copper on practice ground 77 mins, with Air Mechanic Power 8 mins, with Air Mechanic Lindon 9 mins.

R.F.C., Montrose.—Capt. Longcroft with Capt. Fergus (Royal Scots) as passenger on B.E. machine. Ground too soft, covered with snow

Hendon.—At Temple School, late in evening George Temple gave short exhibition flight.

Liverpool (Waterloo).—Mr. Melly started for Southport on "V" but had to land after a couple of miles owing to omitting to turn on oil tap, which was inaccessible while strapped in his seat by safety belt.

Brooklands.—At Vickers School, Mr. Knight on biplane, then with Mr. Waterfall. Then with two prospective pupils. Later Mr. Waterfall straights.

At Bristol School, Mr. Merriam with Lieut. Peirse, Mr. Bendall on another machine with Lieut. Hosking. Mr. Merriam with Mr. Strain. Lieut. Morgan for certificate. Mr. London for certificate. Lieut. Peirse flying. Mr. Merriam with Lieut. Cogan.

SUNDAY, April 13th.

Hendon.—At Temple School Mr. G. L. Temple out on 35-h.p. Caudron at 600 ft. for 20 mins, finishing with fine steep vol plané.

At W. H. Ewen School, Mr. Turner on 35-h.p. Caudron No. 1. Messrs. Stewart and Warren circuits on No. 1. M. Baumann on 35-h.p. Caudron No. 2. Messrs. Pendlebury, Gist and Goodden straights on No. 2. Lieut. G. Adams rolling and straights. Mr. Turner on 60-h.p. Caudron exhibitions and passenger carrying.

Brooklands.—At Howard Flanders School, Raynham out in afternoon but came in after few circuits to have engine miss cured. Afterwards out for ½ hour and then in bomb-dropping competition. Also a few circuits after tea.

At Vickers School, Messrs. Barnwell and Knight on biplane. Then Mr. Waterfall with Mr. Barnwell behind circuits; then circuits alone. Mr. Wight circuits; Capt. Wood flying No. 5 mono followed by Mr. Barnwell; Capt. Wood then flying biplane.

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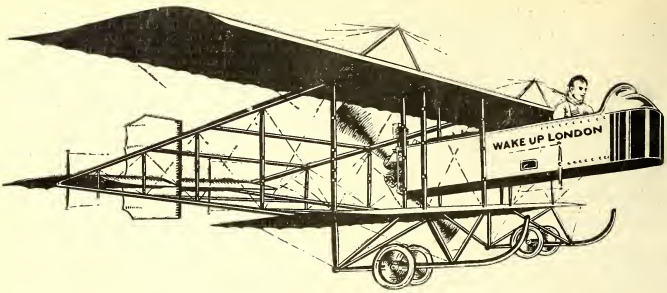
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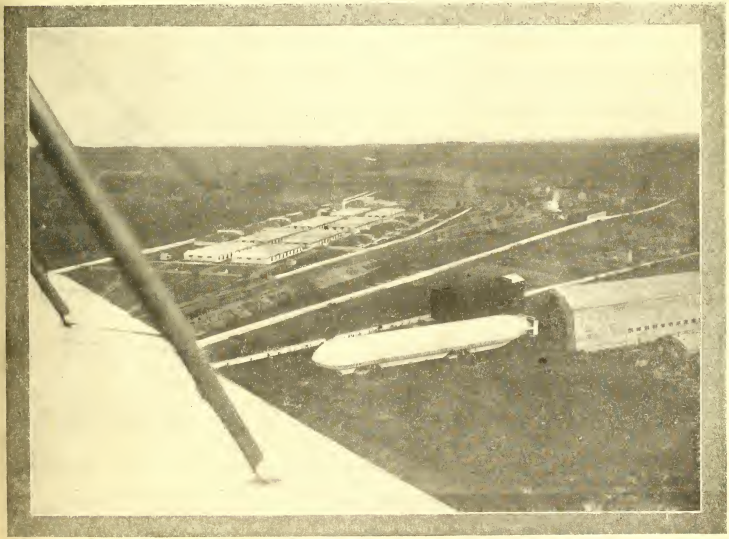
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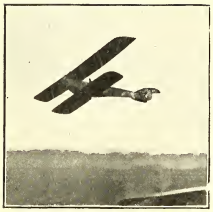
Edited by C. G. GREY. ("Aero Amateur")

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AS IT SHOULD BE.



This photograph of the first French rigid dirigible, the "Spiess," was taken from a Zodiac biplane. It should be an omen of the position aeroplanes will occupy in the next war.



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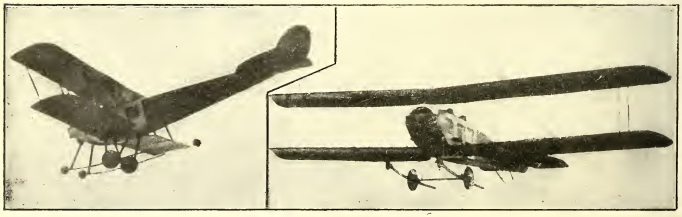
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A Discourse on Waterplanes.

The best of being a critic is that the rôle entails being wise after the event, whereas the performer is regarded by the public as an inferior kind of person for not knowing as much before as the critic knows afterwards. Consequently those of us who were at Monaco and saw some thousands of pounds spent in vain for our edification by aeroplane constructors who were out to win a prize valued at a mere one thousand pounds are entitled to talk or write in a superior way on the strength of the knowledge we think we have gained. As a matter of fact most of us now know quite a lot more than we did, but the sum total of that knowledge is a mere nothing compared with what all who intend to build waterplanes will have to learn before the really seaworthy machine is evolved. However, some of the ideas on the subject brought forth by the fiasco at Monaco may be worth putting into print, because they may, at any rate, suggest a much more valuable line of thought to those who read them. But first let me disclaim any personal responsibility for any of these, for I think I can claim that I never suffered from an original idea in my life, and if any improvement or any line of development is suggested in the following observations the credit belongs to people who made apposite comments on the occurrences at the time, and to the Clerk of the Weather, who kindly displayed the weak points of a collection of machines which at the time, because of their novelty, seemed singularly excellent.

If the weather had been as good as one has a reasonable right to expect on the Riviera at this time of the year nearly all the machines would have gone through the actual competition for the Grand Prix with flying colours, and we should all have thought what wonderful progress had been made in waterplanes. As it was, thanks to an opportune Mistral, we learnt more in half an hour than we should otherwise have discovered in six months, for without the temptation of an important prize the pilots would never have ventured out in such a wind and sea, and we should not have seen how much the machines could do and could not do.

A few people in this country, and probably fewer still elsewhere, have had experience of waterplanes in real wind and sea, but it is not given to everyone to go down to the Isle of Sheppey and see our naval aviators at work, and as the Navy does not issue reports of the experiences of its pilots the generality of those building or hoping to build waterfliers both here and abroad have perforce based their designs and their ideas on experiments on the comparatively smooth water of rivers, lakes, and more or less protected harbours and estuaries. The average constructor is not in a position to say, "Thank goodness here's a gale of wind, let's go out and break something so that we can learn something." Yet that is the spirit in which one should set about the work if one could afford to do so. The present system of only going out in comparatively calm water conduces to the development of a type of machine which is as like the real seagoing waterplane as a Thames skiff is like a ship's whaler.

Initial Difficulties.

The first thing a waterplane maker learns is that under certain conditions water is a great deal harder than ordinary grass land. Water is incompressible—hence the Bramah press and its derivatives, such as hydraulic riveters, lifts, *et cetera*—and a flat-bottomed float finds on hitting water none of the give that a wheel finds on hitting turf. On the other hand, water is easily displaced, so that in a sideways "landing," where on land a wing tip might scrape the ground and throw the machine upright again, on water the wing tip goes right in, followed by the edge of the float on the same side, the machine spins round, generally goes in nose first, and turns over. The turning over process is, as a rule, quite gentle, but a complete bath in sea water is not good for any part of the machine, and very often the machine is absolutely wrecked by willing helpers who try to tow it in, or lift it right side up by laying hold of the wrong parts.

Another trouble about water is one which appears at first sight to be more the pilot's concern than the maker's. That is the difficulty of landing on a substance which may get up and hit one five or six feet higher than one expects, or may fall away an equal distance just when one thinks one has judged it to a nicety. This trouble is further increased by the fact that when water is quite calm one can see right down into it and cannot judge to within ten or twenty feet the exact whereabouts of the surface.

The ordinary pilot who has done just enough flying to qualify for appointment on production to Colonel Seely's band of brave young men may easily imagine that if he had to pay for repairs himself he would find plenty of opportunities for daring deeds while practising landing on "ground" which is as hard as steel and yet lets him through it if he hits it the right way, which may or may not be there to land on even when he has seen it a fraction of a second before, and which may at times be invisible over a moving patch covering a distance of several dozen yards round the machine.

Getting off is really no easier. The fact that most water flying has been done hitherto on smooth water has naturally caused makers to use hydroplane floats. Now, hydroplanes are excellent things in their way, namely for travelling fast on smooth water, and no doubt if anyone could afford to build a hydroplane "Aquitania" which would bridge from wave to wave the hydroplane principle would be good in a sea. But so long as a hydroplane is shorter than the "pitch" of the waves—that is to say the distance from crest to crest—it must perforce follow the contour of the waves. Consequently one sees hydroplane boats in a little loppy sea race up to the crest of a wave, leave the water altogether at the top and fall with a huge smack on the downward slope, pick up speed, half bury themselves in the opposite slope, pick up again, and repeat the operation *ad nauseam*.

Now this is exactly the path one does not want an aeroplane to follow. It would not be so bad if the contour of the waves remained in one place. Then,

assuming a waterplane to be starting head to wind, one could race down one slope and time things so as to have a proper flying angle on reaching the top of the next slope. But in practise the downward slope is falling away under one and receding, while the upward slope is rising and approaching. Consequently, the machine is dropped by its support while it is trying to gather speed down hill, and is then pushed up by the chassis just when the wings are trying to lift; and, in addition, it is blanketed by the approaching roller from receiving the wind in the best position.

Further, when starting on the downward slope the wind is beating down on the upper surface of the planes and forcing the floats in, which makes it more difficult to gather speed, and on reaching the top of the upward slope, when the speed has been got up, the crest of the wave falls away and leaves the machine in an appalling tail down position, so that it is practically stalled in the air, and flops down hopeless on to the next wave. These undesirable effects are produced chiefly by using floats which compel the whole machine, fuselage, planes and all, to follow the angle of the surface of the water which they happen to be travelling at any given moment. If a pilot wishes to get the best effect of the downward drop off the crest of one wave and flattens out to gain speed he will probably find himself digging the noses of his floats into the next wave.

How to Meet the Difficulties.

The machines at Monaco showed us how to meet some of these difficulties. The unsprung Nieuports, Borels, and Deperdussins, with rigid connections to the floats, buckled their chassis, smashed their floats, or broke their tails. The sprung floats of the Farmans were obviously better, but best of all were the sprung chassis of the Bréguets. On Moineau's machine the front of his floats were hinged on rigid struts and the backs were sprung, the big central float having the familiar oleo-pneumatic arrangement which is Bréguet's patent, I believe. After his terrific battle with the gale on the Saturday Moineau told me that he never felt the shock of hitting the waves as he was getting off, though from the shore one could see him leap a dozen hollows and plunge through a dozen wave tops before he got clear, and from the way the spray flew the shocks must have been terrific on the floats.

Now, it should be noted that the floats were Fabre floats, which are themselves somewhat elastic, being built of wood and fabric combined. Also, they were not real hydroplane floats at all, for they had pointed bows which split the water as they plunged in. The two balancing floats carry considerable weight when the machine is moving slowly, but as soon as it begins to lift at all they are clear of the water, and only the central float is working. Consequently, there is freedom from the danger of one float of a pair hitting the water first and breaking or spinning the machine round. The chief objection to these floats is that they must set up a good deal of head resistance, the two small floats having their noses cocked up at a big angle. Still, with all the objections the whole arrangement of floats and chassis struck many of us as being superior to anything else there.

Brégi's Bréguet differed in having two Fabre floats with blunter noses than Moineau's central float. These were hinged to the bottom of a central V under the fuselage and were sprung by rubber suspenders on the top to big struts sliding on the fuselage, much as in the Vickers and R.E.P. It struck me at the time that the Vickers patent sliding chassis strut has in it one of the finest possible attachments for floats, for by mounting it on universal joints and springing the fore and aft bracing it can be made to give all over, which is just what one wants.

It was noteworthy that there was not a rigid angle in the whole Bréguet arrangement, there were hinges everywhere, and in the connections between struts and floats there were ball-and-socket joints. No transverse strain was put on anything. It was all plain push and pull. The strength was in the design and not in mass of material. There are various things in the Bréguet that one could criticise, but the seagoing people at Monaco agreed that both the Bréguet chassis were the most seaworthy jobs there.

The big strut tubes were painted, wrapped with fabric, and painted again, and all the other metal parts were smothered in paint, so they seemed fairly salt-proof, except that they still retained the aluminium leading edge to the planes. The fuselages are now built with four stout tubes to the very tail, so that they are much stiffer against twisting strains than when the single central tube was used. Also, the fuselages are covered with fabric, and have a fin down the back. This covering is better than the old aluminium sheeting, which would rot in sea water.

The tail float comes to an edge below, so that it does not smack the water on alighting, as a flat float does. The breaking up of Moineau's machine at Sau Remo occurred after the waves had smashed the propeller and left it helpless, and after a tug had rescued the crew and tried to tow it into harbour. This only came out after the story of breakage in trying to get up. I heard also that when the wreck was fished up the tubes of the wings and fuselage and chassis were all wrapped round the 200-h.p. engine by pulling along the bottom, and that the engine was almost unhurt, so steel tubes have their advantages in various ways.

Limber Joints.

The thing about these Bréguets that appealed most to the experienced people was the absence of rigid joints. Mr. Burgoine, who is I believe recognised as one of the most experienced of boat designers, and is certainly one of the most advanced thinkers in that sphere of motoring, and Mr. Oliver Thomas, a very successful American constructor, both emphasised the need for play all over. Mr. Thomas pointed out that even land-going aeroplanes must have plenty of play, and quoted the fact that there is not a rigid joint anywhere in a Wright machine, a view borne out by the fact that the sockets on Farman machines amount in fact to pin joints, owing to the give in the wood, and there are no rigid joints in a Cody, except in the chassis. There is certainly a tendency to make aeroplanes too rigid, and where a rigid member is used as a spar or a strut it should be allowed to play at its junction with any other member. British, French, Swedish, and Norwegian sailor-men of various ranks with whom I discussed these questions all seemed agreed on the points on which I have discoursed above.

Concertina Floats.

The concertina floats on Fischer's Farman suggested a development of an idea brought to my notice some months ago by Mr. Salamons of Brussels. His idea was to have collapsible pneumatic floats, which would be deflated when off the water and blown up again by a compressor on the engine when coming down. The idea is worth trying, and it ought to be possible to make such a float with a top surface of such curvature as to lift its own weight while in the air. The lower surface is less important, but it could, I think, be made to buckle inwards, so as to follow more or less the curve of the top surface and reduce head resistance to a minimum. In fact, it ought to be possible to make a neat job of the notion by building a biplane with a short well-sprung lower plane some distance below the fuselage and simply blowing out sections of the lower surface of that lower plane. There is the obvious objection that if the engine stopped there

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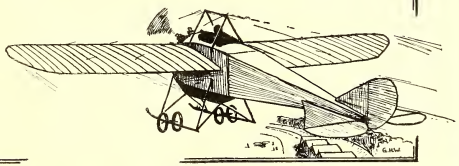
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would be no compressor at work; but the equally obvious remedy is to compress into a reservoir and inflate from that. The Bréguets used a compressed air cylinder for the self-starter, and this would do as an inflater. The idea is nothing like so silly as it may appear at first sight, though I fancy it would be chiefly suitable for small machines of from 50 to 200 h.p., for the real sea-going waterplanes would probably need a different system entirely.

Sizes of Waterplanes.

Writing of really big machines reminds me that one of the most experienced and soundest of British pilot-constructors, whose name, knowing his dislike for publicity I will not mention, after standing on the concrete blocks below the pier at Monaco watching the start in the Mistral, walked quietly back along the quay while we others were discussing the success of Moineau's 200-h.p., and then cut in with the remark: "We have got to start where Cody has left off." That about sizes up the situation. When Mr. Cody said he was "tired of building midgets" he was just making a plain statement of the waterplane situation.

Mr. Cody's military prize-winner, fitted with well-sprung floats, would make a nice little experimental machine. I am told that others than Mr. Cody who have flown it find it very tender fore and aft. That is all to its advantage at sea, where the wind is steady, and so removes the disadvantage of such tenderness, and where the position of the machine due to the waves as it gets off makes quick fore and aft control a necessity. It looks as if the Cody type might in itself be very good on water, for the ordinary tailed machine has a habit of banging its rear float into the water as it gets up, and the ordinary flying-boat of the Denhaut, Curtiss, Donnet-Lévêque, or Columbia type would be perfectly useless in a short, choppy sea. I except the Sopwith bat-boat type, because having the tail high up, and having a real boat bow it gets away from the obvious disadvantages of the others. Mr. Sopwith himself still regards his "bat-boat" as a pure experiment, which is a pleasing change from the usual designer, who is insulted if one dares to insinuate that his latest notion is not the last word in its own way.

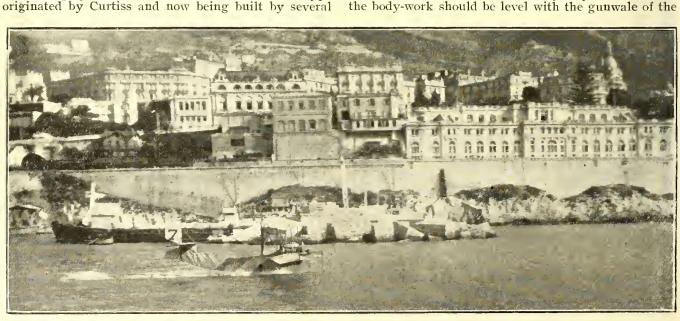
As to Flying Boats.

The death of Louis Gaudart showed us what a death-trap the ordinary type of flying-boat is, and in the same category one must include machines of the type originated by Curtiss and now being built by several other firms in the States—namely, those with the pilot sitting low down right out in front of the planes, while the engine and propeller are high up behind him. If any one of them really dives into the water as Gaudart did, the pilot has scarcely a chance of escape. True, Robinson managed to escape drowning in his Curtiss after taking a header into the Mediterranean last year, but he was very nearly drowned. Even if the machine only dives from a small height, the pilot and passenger are so locked in by the tackle behiud that only very expert swimmers could get out, and if the height is anything over thirty or forty feet the shock of the water would certainly drive their heads back against the things behind and stun them or break their necks. In Gaudart's case, he had a starting handle projecting over his left shoulder, and a carburettor-pipe practically between his shoulders. The shock was so severe that the whole front of the boat forward of the lower front spar and the front engine-plate was carried away; there was not a sign of the pilot, his controls, or anything else left. Of course, it is criminal to place a man thus, and no pilot with sense would fly in such a position.

Makers of the Curtiss type will defend it by saying that the engine and so forth being high up will carry over the heads of the crew. That may be so, but there must be something in the boat itself fairly solid, in the way of cross-beams and the like, which is quite able to break the back or neck of anyone thrown against it by solid water. The defence to this is that no pilot with experience is going to dive head first. The reply is that controls break, and pilots make mistakes, and gusts do queer things, and that the chief advantage of flying over water is that, in a properly arranged machine which will split the water as it dives into it, one ought to be able to take a toss which would kill one on solid ground. Janoir's dive at Monaco and Commander Samson's in the Swale are evidence in support of this.

A Suggestion.

It seems that the best way to build a flying-boat is to build the planes and the body-work for the pilot and passenger, with all the controls, the engine, the tanks, and the propeller gear as a separate unit from the boat. The boat should be on short but flexible spriugs to take up landing shocks. The engine and tanks should be inside the boat to reduce head resistance, but not attached to it in any way. The floor of the body-work should be level with the gunwale of the



The Artois flying boat starting on its last flight. M. Louis Gaudart, the pilot, was killed in the accident.

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boat, and streamlined so that it would offer less head resistance than the engine and tanks do at present. The chief trouble is the arrangement of the propeller. Personally, I should prefer twin propellers, as in the Wright, which would give a clear "emergency exit" backwards in case of a dive; but if a single propeller was used it would be well behind the body-work, and there would be a way out either side of it. Possibly even a better way would be twin tractors, with the engine in front on a level with the lower plane, to raise the centre of gravity, and the pilot far enough back to see the water under the rear edge of the planes. Any of these would be as efficient as and much safer than the present method.

The use of a tractor screw may be left out of question, because, as Prévost's experience showed, the screw must not be placed so that it may be struck by a solid wave. It is quite bad enough to have it working in the spray from the floats. Also, a big, slow-running, geared-down propeller is both more efficient and less liable to damage.

Really Big Waterplanes.

When one begins to discuss really big machines of over 200 h.p. one approaches a different problem. The Deauville Waterplane Meeting in July is likely to show some quite new departures, judging from what I heard at Monaco, for by then the French constructors will have had time to profit by their recent experiences; and it is to be hoped that some British machines will also put in an appearance. I heard of designs for machines of 500 h.p., mounted on long cylindrical floats with no pretence to helping the machine off the water, but simply to be dragged through by sheer power till the planes lifted. Some favoured this idea plus Guidoni "pallettes" to force the floats off the surface. These "pallettes" are tiny metal planes sunk below the floats and set at a coarse angle. They are so small that their head resistance when flying is supposed to be negligible. The disadvantage of both these systems is that the machine is more or less forced to follow the angle of the waves.

Personally, I fancy more could be done with regular torpedo floats, held rigid against sideways twist but allowed to move a little longitudinally both vertically and endwise. They could drive through the water faster than anything else, and would probably come out easily.

Then, again, there are the possibilities of the really flying destroyer, with tandem multiplane wings, to be considered; but that type is for the big shipbuilding firms, or multi-millionaires, only, and I fear it is many years ahead.

Details Worth Attention.

Many details demand attention. There is the whole question of folding wings, which the de Marçay showed to be a practical proposition. There are distinct advantages in being able to fold one's wings when navigating on the water in harbour or when riding at anchor, or when compelled to come down owing to engine trouble.

There is the question of multiple engines, to keep control on the machine while the other engine is being put right. To Mr. Short belongs the credit of first putting this idea into practise.

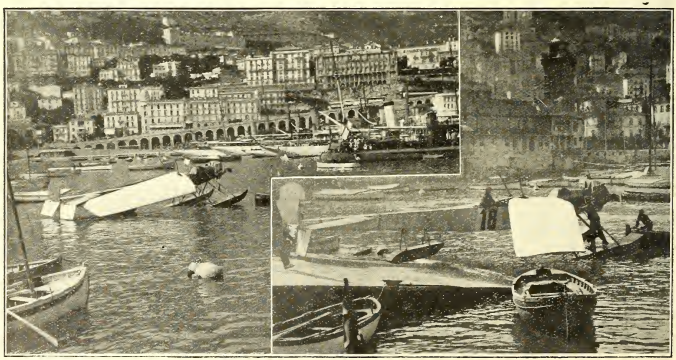
There is the matter of accessible engines, built so that certain parts, such as valves, plugs, etc., can be easily replaced, in the manner of the motor-boat engine produced years ago by Mr. Clift.

There is the acquisition of inherent stability, already investigated with more or less success by Messrs. Dunne, Weiss, Page, Etrich, and others.

The problems before us are endless and demand much money, and I can only hope that this lengthy discourse may assist in some measure those who are working to produce the perfect waterplane whose possession will mean so much to this country's safety and welfare.—C. G. G.

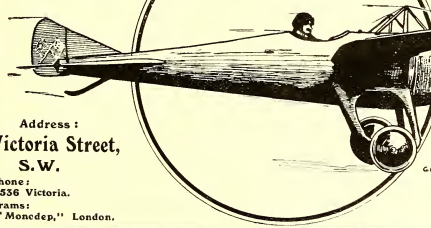
A Change of Address.

A. V. Roe & Co., Ltd., have now removed from Brownsfield Mills to more commodious works at Clifton Street, Miles Platting, and all communications should be sent thither in future.



The First Waterplane with Folding Wings.—On the left the de Marçay is shown moored with folded wings. On the right the wings are being screwed into position by the mechanic in the pilot's seat—the man in front is not assisting. The advantages of being able to move the wings out of the way in harbour, or when on the water, is obvious.

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The Command of the Air—*Continued.*

BY W. E. de B. WHITTAKER.

At present, and probably until the next European war extends experience, the main use of the aeroplane is in the carrying out of reconnaissances, both strategic and tactical. Aeroplanes will assist cavalry in its most important duty. Perhaps in the days to come the aeroplane will become a fighting unit. Tennyson's dream of aerial battles may come to pass. Then, and not till then, will it be possible to create a separate standard of power in aircraft—that is, so far as aeroplanes are concerned. The question as it affects the dirigible balloon is distinct and separate.

Cavalry, apart from its use in shock action, acts as the eyes of an army. Yet none would argue that, because Germany has fourteen divisions of cavalry (fighting strength 50,400) as against one division in the British Army (fighting strength 9,800), we should increase our mounted forces sixfold, irrespective of any increase of other arms. It is useless to have a great superiority in one arm of the Service and a marked inferiority in all other arms.

There is a natural limit of size in the armies and navies of the world. It depends, firstly, on the men and money available; and, secondly, on the nature and extent of the areas to be defended. A small nation of compact territory naturally requires a smaller defence force than that of a widely extended empire such as Russia. The general position of a Power has also some bearing on the situation. Such a nation as the United States of America requires a large navy only that it may interfere with effect in the private business of its neighbours, and that its insults to civilised Powers may pass unavenged. The United States lie in no danger of serious attack from abroad. The uncoveted is invariably safe.

There is also a clear limit to the size of aerial fleets. The question of money and men is again of importance, but the supreme factor is the space required for the multiplicity of machines in peace or in war. The rapidly increasing size of aeroplanes and dirigible balloons makes this question one of increasing importance. A modern battle front may be anything from ten to one hundred miles in extent. Armies wage battle over country of varied type. There is no effort to select level ground. Therefore, in the majority of cases, not ten per centum of the field of battle would be available as landing ground for aircraft. This supplies one limit in the number of aeroplanes and dirigible balloons employed in land warfare.

At sea conditions are different, and the limit of number depends on other considerations. For the immediate future, at all events, the hydro-aeroplane will not be capable of independent navigation for more than a few hours at a time, and it must of necessity operate from a ship of war or from a coast station. It will be seen that the maximum number of hydro aeroplanes with a fleet at sea can be arrived at by an estimation of the accommodation available per ship.

The gross strength of the armies of six leading Powers of Europe is, roughly, as follows:—

Armies (at War Strength).	
Great Britain	800,000
France	3,120,000
German Empire	3,800,000
Italy	1,900,000
Russia	2,700,000
Austria-Hungary	2,000,000

The military flying corps of these Powers will probably be ultimately in the same proportion as are the above figures. There are not enough data available on which the approximate strengths can be discussed. The nation which has so far given most organised thought to the aerial question during the past few years is Italy. This country, guided to some extent by the experience gained in Tripoli has proceeded with the formation of a flying corps which in a short space of time will number twenty escadrilles of twelve aeroplanes apiece (240 aeroplanes), and in addition there will be a fleet of six highly efficient dirigible balloons.

It so happens that the numbers of Italy's army more nearly coincide with ours than do those of any other Power in the concert. If we follow their lead and bring the Royal Flying Corps up to a proportionate strength we should need 192 aeroplanes on active service as against the 84 promised over a year ago. I am, of course, speaking throughout of the aeroplanes

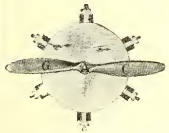


The Spiess rigid dirigible outside its shed at Saint-Cyr during its tests on April 14th. The biplane above it is the Zodiac, from which this week's frontispiece was taken, the two photographs being taken within a few seconds of one another.

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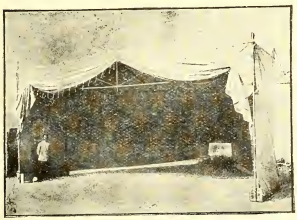
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on the establishment without including any reserve. It is curious to note that in a short time the aeroplanes in the possession of the French Army will be in the same proportion to the war strength of the troops as is the case in Italy.

Perhaps it would be opportune to insert here a summary of the approximate existing aeroplane strength of the six Powers named above :—

Great Britain (R.F.C., M.W.)	40 (possibly)
France	600
The German Empire (see AEROPLANE, April 10)	400
Italy	200
Russia	300 (at least)
Austria-Hungary	110

It will be observed at once that there is no accepted proportional "standard" of strength. Each nation has added to its fleet in accordance with national feeling in matters concerning aviation. In Great Britain the critical situation in national football necessarily obscures all other issues, and the paucity of aeroplances is not surprising.

The two nations which realise the gravity of affairs in world politics have both paid much attention to aviation. Germany lags behind France in the matter of aeroplanes only because she has been more successful with dirigible balloons

Russia, if report be true, has purchased more aeroplanes than any other nation. Dozens of valuable machines are lying rotting in their cases, while further orders are issued that some highly placed official may increase his income by the receipt of commission.

The naval strength of these Powers at the beginning of 1913 was as follows :—

	Battleships.	Cruisers. Battle.	Armoured	Protected. I.	II.	III.	T. B. D.	Submarines.
Great Britain ...	55	4	34	18	38	16	179	65
France	21	...	21	15	4	6	68	58
Germany ...	33	2	9	...	26	11	109	13
Italy	8	...	10	...	2	11	22	10
Russia ...	9	...	...	7	1	2	93	29
Austria-Hungary	12	...	...	3	...	3	12	6

There are no figures available showing the respective naval aeroplane strengths of the six Powers. Great Britain, or rather the Admiralty, has developed a naval air corps of high excellence which is at least a year ahead of its nearest rival. Apart from the aviation squadrons which may serve with fleets on high seas, the numerical limit of naval aeroplanes employed on coast defence is only bounded by the extent of the area to be defended. But in regard to the Navy, if the aeroplane strength be maintained up to the proportion at present observed between the navies of the world, enough will have been done. So far as dirigibles are concerned, a two-to-one standard would probably suffice.

The command of the air, which has been discussed so often of recent months, and has been treated with airy facility by the trained journalist, will not be maintained merely by the unlimited increase of aircraft. Such additions can only be made as the general proportion of aircraft to armed forces alters. One cannot suggest any concrete number that it would be desirable to maintain in reference to either aeroplanes or dirigibles. Such a number can only be arrived at by watching the progress of foreign Powers.

Naval and Military Aeronautics.

GREAT BRITAIN.

ADMIRALTY APPOINTMENTS, April 14th :—

Assistant Paymaster C. R. Finch-Noyes, replaced on the active list and appointed to the "Actæon," for flying course at Eastchurch, to date April 12th.

ADMIRALTY APPOINTMENTS, April 15th :—

Commander—Francis R. Scarlett, to the "President," additional, for course of aviation at the Central Flying School.

ADMIRALTY APPOINTMENTS, April 18th :—

Lieutenants—P. A. Shepherd, to the "President," additional, for the Central Flying School, as squadron commander, and A. M. Longmore, to the "Actæon," additional, as squadron commander, to date April 16.

From the "LONDON GAZETTE," April 15th :—

Regular Forces, R.F.C.—Military Wing.—The undermentioned to be Flying Officers : Lieutenant Baron T. James, Royal Engineers, dated April 16th, 1913. Second Lieutenant Robert R. Smith-Barry, Special Reserve, dated April 8th, 1913.

Special Reserve of Officers, Royal Flying Corps, Military Wing :—

Special Reserve of Officers.—The undermentioned Second Lieutenants (on probation) are confirmed in their rank : Robert O. Abercromby and Norman S. Roupell. Henri Charles Amédée de La Faye Biard, to be Second Lieutenant (on probation), dated April 16th, 1913.

On April 17th some experiments were made on Salisbury Plain in connection with the aerial observation and possibly control of artillery. A battery R.H.A. opened fire across Knighton Down at a range of about 4,000 yards, and Major J. F. A. Higgins, R.F.C., with Lieutenant Christy as observer, flew over the zone of fire in a Henry Farman biplane (80-h.p. Gnome). No details are at hand as to the work done, but report states that the results were highly satisfactory.

The first Military Aerodrome to be established in Scotland is now in working order. The aerodrome consists of a long, narrow stubble field of about 62 acres, rented from the farms of Upper Dysart, at five years' tenancy. It is situated about 3½ miles south of Montrose, and one mile from the sea coast, the main road between Dundee and Aberdeen running past the end of it. It stands clear of the surrounding country at the height of 300 feet above sea level, and is exposed to winds from all points. The soil is of a soft clay nature covered with short hard stubble. There is one bad hole in the middle front of the sheds, but this is being gradually filled up with refuse and earth. The sheds, 10 in number, are erected at the east bottom corner, near the road, and are made of canvas stretched on steel tubular framework. The front poles are taken out and the front curtain pulled up for the machine going out and in.

The machines in use at present are two B.E.-2 type, Nos. 216 and 217, and three Maurice Farmans, Nos. 207, 215, and 266, and two new B.E. are expected daily. There is also word of some four or six monoplanes being drafted to this base, but at present the squadron is very much under establishment.

This squadron is composed of about 130 officers and men, under the command of Major Burke. The flight commanders and flying officers being Captains Becke, Longcroft, and Herbert; and Lieutenants Martyn, Lawrence, Pepper, M'Lean, and P. B. Joubert de la Ferté.

Major Burke, Captains Becke, Longcroft, and Lieutenant Lawrence fly B.E. machines, while the others are Farman fliers. The work done is as yet only reconnaisance flying and taking part in local Territorial manœuvres. Most of the flying is done between 6.30 and 7.30 in the morning, and from 9 to 11 in the forenoon; and practically no flying is to be done on Saturdays or Sundays. The sheds are open for inspection by the public on Saturday afternoons from 2 till 4 o'clock.

The squadron is quartered in the Panmure Barracks, Montrose, and is conveyed to and from the aerodrome in two Leyland motor waggons, the officers in two Daimler cars. There are also two Phelon and Moore motor-cycles for dispatch work.

Arrangements for regular work are in a crude condition as mechanics are to be seen any day peeling potatoes or doing some such work in the barracks, this is no doubt owing to the lack of machines at the aerodrome. The guard consists of two sets of two men taking turn about for 24 hours of two hours

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guard and four hours' sleep; and are only armed with revolvers. The greatest trouble o fthis squadron is the lack of machines, only three machines are in working condition at present. Two Maurice Farmans are being overhauled and the planes recovered, leaving only three machines between nine pilots. Last week for three days there were only two machines in flying condition, and, suppose either of them was smashed, the squadron would have been further handicapped. This is an awkward state of affairs, and if the policy of one pilot, one machine (not to mention a spare one) is to be carried out it is time Squadron No. 2 had a dozen more efficient aeroplanes.

FRANCE.

The military aerodrome at Pau is now in a very busy state. Many of the officers make daily trips of some length over the surrounding country. Unlike the Franco-German frontier there is here no opportunity for practical work. Everything comes under the heading of training. The chief pilot is Lieutenant de Malherbe, once a cavalryman of promise and now one of the best Blériot pilots in France. Daily bomb dropping experiments are made. Pau is one of the largest military aviation schools in France.

On April 14, the Saharian escadrille of four Farman biplanes (80-h.p. Gnomes) piloted by Lieutenants Reimbert (O.C.), Cheutin and Jolain, and Quartermaster Benoit flew from Biskra to Touggourt (140 miles) without a stop. Colonel Bouttieaux, who is inspecting, was a passenger with Lieut. Cheutin. On the following day the escadrille flew from Touggourt to Ouargla (110 miles) again without trouble of any sort. On April 16 they returned by air to Touggourt, having covered in three days a distance of 370 miles en escadrille. A day later the whole escadrille returned from Touggourt to Biskra (140 miles) by air in a little over two hours. The whole tour was carried out with perfect precision.

On April 18, at Buc, M. Bernard took three Henry Farman biplanes (80-h.p. Gnomes) through their tests for the French Army.

The two dirigibles Fleurus and the Adjudant Vincenot and several aeroplanes flew over General Goetschy, while he was reviewing the troops at Nancy.

On April 17th a balloon accident robbed France of four military aviation pilots and a civilian aeronaut of distinction. A spherical balloon piloted by M. Aumont-Thieville left Saint Cloud at 2 p.m. On it were Captain Clavenad, commanding the Moroccan aviation section, Captain de Noué, Lieutenant Vasselot de Regner and Sergeant Richy. At 2.30 p.m. it was seen to pass over Fontenay-sous-Bois at so low an altitude that the car struck a chimney. It is believed that this accident seriously injured M. Aumont-Thieville and rendered him incapable of piloting the balloon. Be that as it may, the balloon continued on its course until, at 3.30 p.m., it was over Noisy-le-Grand. It was seen to burst when at a height of six hundred feet. The collapsed envelope floated down to earth "as would a piece of paper." Lieutenant de Vasselot and Sergeant Richy were still alive, the other three were killed instantly. Sergeant Richy died on the way to hospital and Lieutenant de Vasselot a day later. The cause of the accident is supposed to be the premature pulling of the ripping cord owing to their inexperience as pilots. That is also presuming that M. Aumont-Thieville was insensible.

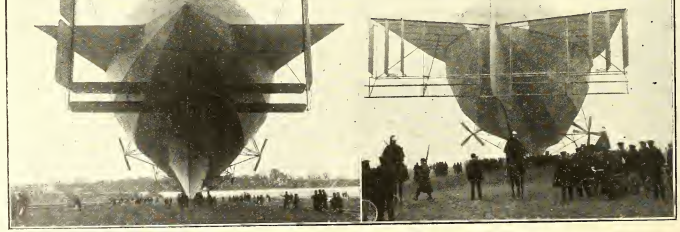
Captain Clavenad (Chasseurs à pied) was born at Cherbourg on April 22nd, 1878, and took his certificate on an Antoinette at Mourmelon, November 23rd, 1910. In 1911 he was appointed to the command of the Moroccan aviation section from which he was removed a year later, owing to his in judicious statements in a public print. A few months ago he was reappointed. Lieut. Vasselot (Infantry) took his certificate two days before his death at Etampes. Sergeant Richy took his in 1912 at Villacoublay. M. Aumont-Thieville was one of the best-known amateur balloonists in France.—W.

GERMANY.

The Zeppelin dirigible Z.4, which recently landed at Luneville, that the rules of international courtesy so rigidly adhered to by the gentle German should not be unobserved, is now almost in a fit condition to take the air again. The necessary repairs have been rapidly made since its return to Friedrichshaven.

Lieutenant aviator von Beaulieu with Lieutenant Striefer as passenger, left Doeberitz on a monoplane with the intention of flying to Posen on April 13. About half way between the two points a forced landing had to be made through engine failure. The machine ran into a ditch and overturned. Neither officer is seriously hurt.—W.

The Prussian War Office has entered the following officers for the Prince Henry Circuit:—Lieutenants Blütgen (Mars-Arrow biplane), Canter (Rumpler-Dove), Hiddessen (Albatros biplane), von Thuena (Rumpler-Dove), von Mirbach (Euler biplane), Kastner (Rumpler-Dove), Weyer (Aviatik biplane), Donnevert (Rumpler-Dove), and Joly (Rumpler-Dove). The Bavarian War Office has nominated Lieutenants von Heller, Vierling, and Heiler, who will all pilot Otto biplanes. Nine civilian aviators are expected to enter on behalf of the Leipzig-Lindenthal Works (two biplanes), the Aviatik Works (a mono and a biplane), Albatros (mono and biplane), Euler (two



A study in tails. The Spiess and the Zeppelin.

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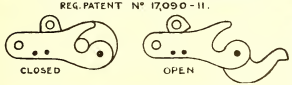
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biplanes), and Goedecke (monoplane). The Albatros monoplane will be flown by Helmut Hirth, who won the last circuit hours ahead of all other competitors.—B.

AUSTRIA.

Lieutenant aviator Uzelac, commanding an aviation company, flew on April 13 on a biplane (90-h.p. engine) with a passenger, from the Fischmeni aerodrome, near Vienna, to Neusatz, in Hungary. He left the first place at 9 a.m. and arrived at his destination shortly after mid-day, having in the meantime covered a distance of 250 miles without a stop.—W.

SWITZERLAND.

A sum of £16,000 has been raised in Switzerland and among Swiss communities abroad, in the interests of national military aviation.—W.

TURKEY.

The Parseval dirigible P.L. IX., bought by the Turkish Army, was taken through its trials at Bitterfeld on April 17th. A flight of two hours was made with a Turkish commission on board.—W.

FOREIGN NOTES.

France.

M. Emile Vedrines, the brother of Jules of that ilk, is at Mourmelon practising on a Hanriot-Ponnier monoplane that he may in the fullness of time pass the necessary tests for the military brevet.

M. Georges Legagneux arrived at Villacoublay on April 13th from Ivry-en-Montagne (Côte d'Or). He left Ivry in the early morning and finally landed at 4.20 p.m.

On April 15th two sets of records fell. The first that of duration and distance with three passengers were beaten by M. Champel, who with three passengers on a Champel biplane (100-h.p. Anzani) flew at Orleans from 3.50 p.m. until 6.57 p.m., covering in that time a distance of 161 miles. His fuel on starting was 100 litres of petrol and 20 litres of oil. The second set were those of altitude with three and four passengers, both of which fell to M. Marty on a Caudron biplane (100-h.p. Anzani) at Crotoy. With three passengers he rose in 35 minutes to a height of 5,900 feet. Then cutting off his motor he came to earth in one continuous spiral. He then took four passengers on his machines and in 35 minutes reached an altitude of 4,750 feet.

Three aviators made flights in competition for the Coupe Pommery on April 16th, the winner being M. Daucourt, who also captured the Cup last year. On this second occasion he left Villacoublay at 5.6 a.m. on a Borel monoplane (50-h.p. Gnome). He flew at an average height of 4,000 feet. He reached Liége, his first stage (192 miles), at 7.40. Restarting at 9.31 a.m., he landed at Hanover (248 miles from Liége) at 1.15 p.m. At 3.30 p.m. he left for Berlin, where he landed at 5.38 p.m., having covered 590 miles across country in one day. He thus became once more the holder of the Coupe Pommery. M. Audemars, on a Morane-Saulnier monoplane (80-h.p. Gnome), started from Villacoublay at 5.15 a.m. on the same day. After landing at Mezières he reached Wanne in Belgium at 10.55 a.m. He was later compelled to relinquish his attempt owing to the high wind. Rene Vidart, also flying a Morane-Saulnier monoplane (60-h.p. Le Rhone), left Villacoublay at 7 a.m. with a passenger, intending to fly to Marseilles, and so capture the Coupe. He gave up at Savigny-sur-Loire.—W.

Germany.

The third stage of the Prince Henry Circuit from Coblenz to Karlsruhe (200 kilometres) is to be lengthened by another hundred kilometres, and will include new controls at Greuznach, Mayence and Frankfort. The aviators have to descend to about 150 metres at all controls and throw down a number ticket. The prizes given for the event are both numerous and handsome, and include trophies presented by the German Emperor, Prince Henry of Prussia, the Grand Duke of Baden, Prince Max of Baden, the Prince of Turn-Taxis, the Bavarian War Office, the General Commanding XIth Army Corps, and by various cities en route.

Great enthusiasm marked the arrival of the French aviator Daucourt at Berlin-Johannisthal on April 16th. Of the two pilots who started from Paris Daucourt alone reached his destination, for bad weather forced Audemars to remain at Essen-Gelsenkirchen. Daucourt covered the distance of 980 kilometres from Chateaufort to Johannisthal viâ Liege and Hanover in a net flying time of nine hours, exclusive of the two landings at Liege and Hanover, and owns the proud distinction of being the first aviator to fly from Paris to Berlin in a day. Huge crowds attended at Johannisthal from three o'clock on and the long hours of waiting were shortened by the activity of twenty odd aviators, till at 6.30 a speck appeared on the horizon and ten minutes later the French 50-h.p. Borel monoplane effected a clean landing. Daucourt, who was suffering from cramp in his legs, was carried shoulder high around the ground, and eventually escorted to his hotel, whilst his German colleagues put up his machine for him. In an interview the Frenchman stated that he had no trouble to find his route as the weather was clear, although on the way to Hanover the wind was very rough. He remained at an average height of 800 metres with the exception of Hanover, where he mounted up to 2,000; his mean speed works out at 100 kilometres per hour. The machine Daucourt used is a little racer of 8½ metres length and 9 metres span.—B.

Austria.

The Austrian Aero Club holds an international meeting on the Aspern ground from June 15th to 22nd.—B.

Chili.

On April 14th the aviator Louis Acevedo was killed by a fall whilst flying from Concepcion to Santiago. The cause is unexplained.—W.

U. S. A.

A new use for aeroplanes has been devised in America. On the occasion of the Western Automobile Association's road races held in March last, the racing cars were followed by Mr. Frank A. Garbutt (President of the Association) in a biplane to see that no unfair manœuvring took place. On the turns, the biplane was able to hold its own, but on the straights the 100 m.p.h. cars ran right away.

The Curtiss Aeroplane Company have recently put one of their engines through a remarkable bench test. The report omits to state exactly what type of motor was used, but previous to the test it had flown more than 10,600 miles with no repairs other than the grinding of valves. After this the engine was run continuously on the bench for 40½ hours at an average speed of 1,040 r.p.m., at which it developed 70.4 b.h.p. On a basis of 55 m.p.h. this performance is equivalent to a non-stop flight of 2,200 miles.

Flying in Roumania.

An excellent flight was made recently over Bucharest by Prince Cantacuzène. Starting from the Military Aerodrome near the city on an 80-h.p. Bristol monoplane belonging to the army with an officer as passenger, he went up to 4,000 feet and made several circuits over the centre of the capital. The flight lasted just over half an hour. Prince Cantacuzène proved himself to his own people the capable pilot he is known to be in this country. This is the first instance of a foreign prince piloting a British aeroplane over his national capital.

The Mansion House Meeting.

The meeting to be held at the Mansion House on May 5th and arranged by the Aerial Defence Committee of the Navy League is certain to be one of the most important meetings on the subject of defence yet held in this country. Already, a far greater number of tickets have been demanded than can possibly be issued. No tickets are being issued to ladies, as the meeting is primarily intended to interest the leading business men of the City in the movement. The only exception to this rule is that representatives of the Women's Aerial League have been invited.

Accident to Mr. Collardeau.

M. Collardeau is to be congratulated upon his escape at Hendon on Monday last. While flying one of the 110-h.p. Canton-Unné Bréguets, his tail broke away at the universal joint, whereupon the machine dived to the ground nose first from a height of about 30 feet, wrecking the machine completely. M. Collardeau strained an ankle and cut his chin, otherwise he was unhurt.

The Monaco Hydro-Aeroplane Meeting.—II.

BY C. G. GREY.

Sunday, April 13th.

On Sunday the weather suddenly improved again, and though there was a wind it was quite steady. Late in the afternoon Brégi and Gaubert left their havens of refuge at Beaulieu and flew back to Monaco. Gilbert, having repaired his Morane's tail went out scraping mountain sides and house-tops and masts in his usual way, though between the hills the air must have been as full of holes as a Gruyère cheese. The machine flies very much tail down, as the 63-h.p. Rhône is too small for it, but when he dives and so gets proper power on, one can see that it answers its controls promptly.

Monday, April 14th.

Hardly anyone did anything on Monday, as the survivors of Saturday's performance were taking no risks. Espanet had fitted new legs to his chassis, and a new float, so the four machines were ready again.

Late in the evening, Chemet, with Wild as passenger, was towed out across the bay on the 160-h.p. Borel, to qualify for the Schneider Cup. Just before dark they were towed in again with the heels of the floats jambed up under the fuselage and the whole tail under water. It appears that the machine got going at about 90 miles an hour, jumping from top to top of the slight rollers that were still running, and just as she was getting clear the rear portions of the floats hit hard on the top of a wave and the two rear struts buckled, letting the floats up against the fuselage. Fortunately the front struts held, and kept the nose of the machine out of water, so the crew came home dry, but very seasick.

"Bielo" gave up trying to make the de Marçay fly, so she was hauled ashore and taken to pieces. The Astra crew also threw up the game, but in the hopes of making some sort of show they started taking the wings and floats off the 100-h.p. Renault machine to put them on to the fuselage of Labouret's wreck with the 110-h.p. Canton-Unné in it. They were still doing it when I left on Tuesday night. I gather that the performance of these machines has been such a "wash out" that the Astra firm proper intends in future to confine its activities to dirigibles, and that the Nieuport firm, in which M. Deutsch de la Meurthe is also interested, will build biplanes. M. Train, who built and flew and repaired his own monoplane through the European Circuit in 1911, is now employed by the Nieuport firm, so there should be hopes of a really good biplane resulting.

The Survivor's Race.

Tuesday, April 15.

The Commissaires, bearing in mind the sudden rising of the wind at 10 a.m. on Saturday, and evidently trying to avoid a fiasco to-day, decreed that the race should start at 7 a.m. when they were fairly sure of a calm. Herein they were wise, for Saturday showed that there was no chance of any of the machines getting off a rough sea if loaded up with fuel for five or six hours' flying. Their faith was justified, for there was not a breath of wind in the harbour, and even out in the open there was only a faint breeze of 10 to 15 m.p.h. at most. There was a little swell running, but not enough to bother anything with any pretences to being a sea-going aeroplane. In fact, if there had been more wind it would have helped some of the machines to get off quicker than they did. Gaubert, on the Maurice Farman, was the first away, and his engine sounded as if it were running well, but after threshing through the water for three or four miles he stopped right out in the direction of Cap Martin and remained there about an hour. Most of us thought he was shedding petrol to lighten the machine, but Mr. Holt Thomas told me afterwards that he was cleaning out his carburettor. Why it should have been necessary to do so on the wild wet sea when there had been two days in which to do it on land, is one of those little mysteries which make life interesting. Besides, the machine had flown to Beaulieu and back quite well when carrying less load, so presumably the engine gave power enough then for its job, but needed just the bit extra for to-day.

Espanet, the next out, careered along the surface at twice the speed of a destroyer, but could not get off. After a while he disappeared over the horizon to the east, and people said he had gone for a trip to Genoa. In about an hour he also appeared in the air, flying quite well, but after a few laps came down again for adjustments of some sort.

Brégi's Bréguet got off very well and flew beautifully with its tail well up for nearly an hour, when he came down in the bay behind Monte Carlo for alterations of sorts, after which he continued for other periods alternating with stops.

Prévost's Deperdussin also got off quickly at the start, as the smooth sea gave it a chance of getting up full speed on the surface. However, he only flew a few miles and then came down. After floating aimlessly for an hour and a half he gave it up as a bad job and was towed in.

The net result was that Gaubert, who started at 7.3 a.m., covered 270 kilometres in 7 hours 40 mins., retiring at about 2.30 p.m., after staying out long enough to beat Brégi's distance by the painful process of flying a lap—of 10 kilometres—and then sitting on the water while he took his carburettor to pieces. Brégi covered 200 kilometres in 3 hours 3 mins., and finally stopped after doing 260 kilometres by about 11 a.m. Espanet did 190 kilometres in 3 hours 11 mins., and Prévost



M. Prévost and his mechanic after their "ammerrissage brusque" at Monaco. Note the life-jackets.

covered 30 kilometres of the course, altogether 5 laps. Considering that Brégi was doing 57 miles an hour, covering 10-kilometre laps with full load in 6 mins. 25 secs. as regularly as a clock, in spite of taking his corners wide, and that Espanet's Nieuport, making a worse course, was doing 7 mins. 25 secs. for the lap, it will be seen that most of the time was spent on the water.

When they were back in harbour, Brégi told me that his magneto insulation kept going wrong till finally his mechanic could no longer repair it even temporarily. Gaubert's carburettor was giving trouble, as I have said. All I could extract from Espanet's and Prévost's men was that the "motors were not marching correctly."

The Death of Louis Gaudart.

The fatal accident to poor little Gaudart, sad as it was, seemed so lacking in most of the elements of tragedy that it did not appear to upset anyone very much. At any rate, it did not "cast a gloom over the meeting" as such events are generally said to do. Perhaps this was owing to the lack of a mangled corpse over which the morbid could gloat, or perhaps the supposition that he was drowned impressed people less than the idea of a smash on land. As a matter of fact he must have been killed before being drowned.

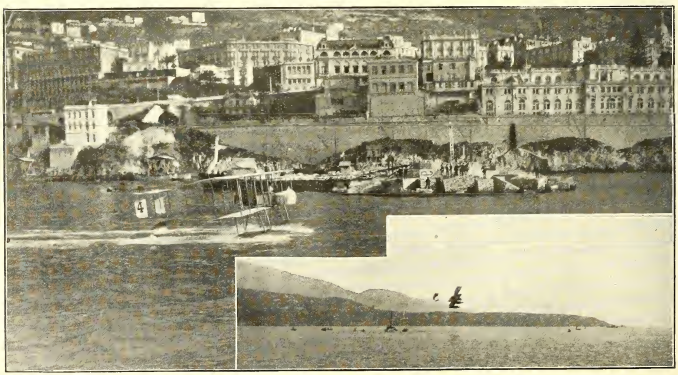
The affair happened thus. Gaudart had been trying for some time without success to make the Artois flying boat fly with a 50-h.p. engine. Latterly he had fitted an 80-h.p. Gnome, and had been truing up the planes which had been pulled about by side-slipping into the water some time before. As soon as Prévost had started in the race Gaudart came out. The weather, as I have said, was ideal for testing, and the newspaper yarn about his being ordered not to fly on account of bad weather is pure fabrication. The boat got up on its step in a few yards, and was in the air quicker than anything that flew at Monaco, except Garros' Morane. Being very lightly built it was natural it should do so.

As soon as it got clear of the water one could see that it was absolutely unstable fore and aft. After flying in a switchback path for about 250 yds., Gaudart switched off. Immediately the thrust of the propeller, high up as it was, ceased to act, the machine promptly swooped upwards. For remember that the head resistance is low and the thrust high, so that to make a balance at all, and to prevent the machine from pitching on its nose, the tail must have a negative angle, and this is assisted when in the air by the wide flat bottom of the boat cocked up in front and at the stern. Consequently when the downward thrust ceases the whole tendency of the machine is to rear straight on end.

Immediately this happened Gaudart switched on again, forced the machine level and then got the nose down a little. We all hoped he was going to alight, but either he did not like coming down at such speed, or else determined to try a little longer, and so he went on. By this time he was out of the dead still air under the shelter of the Rock of Monaco, and met the little gentle breeze in the open. This would probably momentarily have the same effect as switching off or slowing the engine, in that it would decrease the propeller thrust and increase the lifting effect of the main planes. In any case, the machine lifted suddenly, reared straight on end, shot up to about 50 feet, fell over to the left, and dived nose first. Standing on water level we had a complete plan view of the machine from the time it reared till it hit the water. It made no attempt to flatten out; in fact, it actually struck with a tendency to be bottom uppermost, the left wing going in a fraction of a second before the other. It did not disappear entirely under water, but the tail fell over at once and all we could see was the bottom of the boat. Placed where he was, right in front of everything, poor Gaudart never had a chance of escape. If the front of the boat had held together the water would have hit him on the face and chest, and forced him through the backboard against the front engine plate, either breaking his neck or his back or his skull. He might have hit the starting handle, or the carburettor, or the engine itself. The only thing he could not possibly do was escape hitting something.

Motor-boats promptly raced over to the wreck, but even if he was merely stunned and not killed by the fall, they had no time to reach him before he was drowned. There is no truth in the story that he was seen hanging onto the wreck and fell off before the boats could save him. Nothing moved after the machine once struck.

When the wreck was towed into harbour and raised onto a pontoon it was found that the whole bow of the boat forward of the main planes and front engine plate had carried away bodily, there was not a sign of the pilot's seat, control levers, protector cowl, or anything. The rest of the machine was all there, though rather tangled up by the tow-



M. Gaubert on the Maurice Farman starting in the race for the International Sporting Club Prize, which he won on Tuesday. In the small photograph he is seen rounding the mark boat. Cap Martin is shown in the distance.

ing and lifting, but all the part appertaining to the pilot had vanished utterly.

Later in the day Gilbert and Garros on the two Moranes did some very pretty flying, the former taking up numerous passengers, including Mlle. Marvingt, the famous aviatress, and the latter playing round the masts of the ships in the harbour, and "saying good day to the Casino," as a bystander put it.

The Schneider Cup Race.

Unfortunately I had to leave before the race for the Schneider Cup took place, but I gather that it also was something of a fiasco. It was flown over 28 laps of a 10 kilometre course, in perfect weather, and the pilots could start when they liked, flying against time. Prévost started first and covered 200 kilometres in 2 hrs. 2 mins. 29 secs., 250 kilometres in 2 hrs. 31 mins. 37 secs., and the full 280 kilometres in 2 hrs. 50 mins. 47 secs. After he had finished the Commissaires decided he had not flown over the finishing line, and so after a delay of nearly an hour before being told he was requested to go out and do so, with the result that 58 minutes was added officially to the above time.

This is typical of the management of the whole meeting, which was about the most "messed up" affair I have ever seen. The timekeeping was extraordinarily inaccurate, and the official times were hardly worth noticing. In one motor-boat race the official times when worked out showed that a boat which is known to do about 28 knots on smooth river water, did about 35 knots for a flying kilometre in the sea, and 40 knots for a mile with a standing start! M. Georges Prade may be an excellent "Clerk of the Course," but his assistants badly need reorganising.

However, to return to the race. Garros, for some strange reason, could not get the little 80-h.p. Morane monoplane off the water, although she had flown so well four days before, so he returned to port. Espanet, on one Nieuport, retired after 70 kilometres. Weymann, on a new 100-h.p. Nieuport kept for this competition, covered 200 kilometres in 1 hr. 59 mins. 23 secs., and so was rather faster than Prévost, but he broke an oil pipe three laps from the finish. His best lap was 5 mins. 13 secs., or about 68 miles an hour, which



Prévost's Deperdussin on the slipway.

shows the slowing effect of floats, for the same machine with its ordinary land chassis would do well over 80 m.p.h.

So ended the meeting. An absolute failure from a sporting point of view, but, thanks to the irregular weather, the most valuable thing in connection with waterplanes that has yet happened—especially for this country.

Liverpool Shows the Way.

One of the most encouraging signs of the times is the news that Liverpool, at any rate, is awake to the nation's deficiency in the matter of aircraft and pilots to fly them. Two enterprising journals of that city, the "Courier" and the "Express," not content with a campaign of weeping, have set on foot a scheme for the formation of a Liverpool Flying Corps, which bears the marks of a practical undertaking. This new enterprise is not an affair of giving one or two or half a dozen aeroplanes to a grateful or ungrateful war office; on the contrary, Liverpool intends to take the matter entirely into her own hands, and to provide not only machines, but also a flying ground, hangars, workshops, mechanics, instructors, and pilots. The scheme is arousing considerable enthusiasm in the district, and this enthusiasm has begun its materialisation in a munificent gift by two of Liverpool's leading citizens, Messrs. W. E. and C. A. Cain, of Robert Cain and Sons' Brewery, who have offered to give a couple of aeroplanes, or their equivalent. The scheme looks like going through with a swing; it is to be hoped that the remaining cities of England will not confine their appreciation of Liverpool's go-ahead action to the clapping of hands and the waving of head-gear. —A. B.

The Sussex County Aero Club.

A meeting of the Brighton-Shoreham Aero Club was held on Saturday, and the proposal to change the name to the above was adopted. It is proposed to have a centre in Hove, as being more convenient than Shoreham for the majority of members. There is a scheme on foot to start a subscription list for the purpose of purchasing an aeroplane or aeroplanes to be presented to the Government. The Mayor of Hove is being approached, and a meeting will be called in Hove in order to consider the matter. A lecture, it is hoped, will precede the meeting. It would be a good thing if all counties were to do this, considering the present Government methods. Further information will be forthcoming later.—Clarence Winchester.

The "Sussex Observer" in conjunction with the Bognor Pier management and certain enterprising citizens of Bognor have arranged a Whit-Monday aeroplane race from Shoreham to Bognor pier, under the auspices of the Sussex Aero Club. Entries have already been received from Mr. Eric Pashley (Farman biplane), and from Mr. A. E. Geere (Avro military biplane).

Mr. Pickles at Wolverhampton.

Mr. Sydney Pickles, having completed his engagements at Gloucester and Cheltenham is to fly his 60-h.p. Anzani-Blériot two-seater at Dunstall Park, Wolverhampton, under the auspices of the Midland Aero Club. It is probable that he will do some cross-country work in the neighbourhood, though the district and the aerodrome are about as bad from the aviator's point of view as anything in this country.

Nota Bene.

It should be noted that the late J. B. Hall, who was shot in a flat in Shaftesbury Avenue recently, was in no way connected with Mr. J. Laurence Hall, who has recently been flying in various parts of the country, and who learnt to fly on a Blériot at Hendon. The daily press have, unfortunately, assigned to the dead man various performances of Mr. Laurence Hall, who is naturally desirous that those interested in aviation should realise that he is in no way mixed up with this affair.

Mr. Laurence Hall is, so far as one can gather, the only Yorkshire aviator of his name, and is the only aviator of that name who has flown a Blériot at Hendon or anywhere else.

Propellers in Competition.

The Aeroplane is informed that the Integral propeller was used on Daucourt's Borel from Paris to Berlin, on Vidart's Morane with a passenger from Paris to Marseilles, and on Audemars' Morane from Paris into Germany, as well as on most of the machines at Monaco. M. Chauvière was practically the first successful propeller maker in France and he has maintained his position exceedingly well.

The Death of Sir Charles Rose, M.P.

Everyone connected with aeronautics will feel a sense of personal loss in the death of Sir Charles Rose, Chairman of the Royal Aero Club, who died on Sunday afternoon last. Early in the afternoon Sir Charles arrived at the London Aerodrome, and went up as a passenger with M. Vererier, this being his first experience in an aeroplane. Mindful of the importance of his passenger, M. Verrier flew exceedingly steadily, and on descending Sir Charles expressed the great pleasure that the trip had given him. Afterwards he had a long conversation with Mr. Richard Gates on aeroplanes in general, asking many questions on the subject of aviation generally. He remained at the Aerodrome for some time, and seemed in quite his usual health and spirits. About quarter past four he started to drive back to his residence in South Audley Street, and when the car arrived there the driver found his master in a state of collapse. He at once drove him to Dr. Milligan, who lives close by, but the doctor could only say that Sir Charles was dead.

There will certainly be those opposed to aviation who will say that the deceased gentleman's death was due to his making a flight in an aeroplane, and one may assume that his death was caused by an undue disturbance of his system in one way or another, but to ascribe it directly to an aeroplane flight is obviously unfair. One cannot possibly experience a greater sense of security than one feels as a passenger with M. Vererier, though naturally one's first trip in an aeroplane produces an excitement which one would not otherwise feel. If one assumes that to such excitement is added the further excitement of watching the performances of various other skilled aviators, one can quite understand a strain being put on the system of anyone who is not in a perfect state of health, and who is at all disposed to heart failure. One may also venture to suggest in all seriousness that the jolting over a road in such an appalling state as the local authorities have permitted Collindale Avenue to assume might well be fatal in spite of the most careful driving and the best possible springs.

The death of Sir Charles is a great blow to the progress of aeronautics in this country, as he was one of the few important Members of Parliament on the Government side who ventured to express their belief in the importance of adequate defence.

Charles Day Rose, first Baronet, was the second son of the late Right Hon. Sir John Rose, a leading Canadian lawyer. Born on August 23rd, 1847, he went to Canada at the age of eighteen, joining the business house of George Stephen, afterwards Lord Mount-Stephen. He returned to England in 1871, and became a partner in the banking house of Morton, Rose, and Co. He joined with Lord Mount-Stephen, Lord Strathcona, and others in the Canadian Pacific Railway.

In October, 1900, he unsuccessfully contested the Newmarket Division in the Liberal interest against Colonel H. McCalmont, but on the death of that popular sportsman, Sir Charles Rose came forward again, and was elected in January, 1903. He was defeated early in 1910 by Mr. G. H. Verrall, but regained the seat in the second election of that year.

Sir Charles last spoke in the House of Commons so recently as the 11th inst., when he seconded the motion for the second reading of the National Service (Territorial Force) Bill. He said, amid Unionist cheers, that though he was the only Liberal member whose name appeared on the back of the Bill he would be sorry to believe that there were not many others heartily in sympathy with its objects. The principle that every young able-bodied man should hold himself liable to take his place as a member of the Territorial Force for the defence of his country and to bear his share of the nation's burdens had his unqualified approval and support. No one, he added in conclusion, had better cause than he had to realise how horrible war was, but so long as human nature remained what it was he felt that the surest way of preventing hostilities was to see that this country was prepared against all risks. Sir Charles, it may be remembered, lost two sons in the South African War. He himself was a captain in the Montreal Garrison Artillery, and assisted to quell the Fenian Rebellion in 1866.

Sir Charles Rose was first known in connection with the Turf as Mr. Adrian. He was elected to the Jockey Club in 1891, and was also a member of the National Hunt Committee. He was considerably interested in yachting, and in 1896 challenged for the American Cup, that challenge, however, being subsequently withdrawn. In his younger days he hunted from Melton Mowbray.

In 1871 he married Eliza, daughter of Mr. John Robinson McClean, formerly M.P. for Stafford, and is succeeded by his son Frank Stanley, of the 10th Hussars.

The Death of Paymaster Berne, R.N.

It is with the deepest regret that one records the death of Paymaster Eustace R. Berne, R.N., at Eastchurch on Monday last. Mr. Berne was standing by a biplane on which Lieut. Wildman-Lushington, R.M.A., was about to fly, when the machine was unexpectedly let go. Mr. Berne was knocked down and his legs were caught by the propeller. His injuries were so serious that he died of loss of blood in the Flying Corps barracks shortly afterwards.

Paymaster Berne served on the battleship "Neptune" as secretary to Commodore W. O. Boothby before taking up aviation. He joined the Eastchurch Flying School on August 19th last, and on completing his course on November 23rd he was appointed Flying Officer. He was promoted to be paymaster in March last year, and though paymasters are not supposed to become flying officers, his pluck and keenness as a pilot induced the authorities to make an exception.

Those who knew Paymaster Berne thoroughly appreciated his unflagging cheeriness under all conditions, and his loss leaves a blank place among our friends which will not be easily filled. I hear that he retained consciousness to the last, and went out as an officer and gentleman should.

He died on duty and he died well. However much we may regret that he did not live to win the distinctions he deserved none of us can ask for a better death.—C. G. G.

Mr. Busteed's Escape.

Mr. Harry Busteed was very nearly the victim on the 15th of one of those accidents which, unfortunately, occur in connection with the best regulated experiments in a new art.

For some time he has been carrying out very interesting experiments with a Bristol hydro-biplane on the river Medina at Cowes, and on that day he had flown out into the Solent and alighted on badly broken water, with the result that his floats were damaged and the machine began to sink. It was early in the morning with very little traffic about, so that he was in the water for quite half an hour, and was very nearly exhausted with the cold when he was picked up by a dredger.

While he was floating, a liner came within quite a short distance of him, but in spite of his signals of distress took not the slightest notice. To the ordinary landsman this seems singularly inhumane, but doubtless to the crew of a liner who are accustomed to steaming at full speed through a fishing fleet in the dark regardless of consequences, a mere drowning aviator is not worth the trouble of slowing down and getting out a boat.

The Invalids.

Latest information is that M. Desoutter is now quite out of danger and is making excellent progress towards recovery.

Mr. Flanders' condition is still serious, but not critical, and it is thought that he may be able to leave hospital in a month, though only to be moved to a house in Walton which his family are preparing for him, where he will stay another month.

Captain Risk, R.M.L.I., is also making good progress. He did not break any bones, but his spine was so badly bruised that he is still in hospital. His passenger, E. R. A. Susans, left hospital a few days after being admitted, and is now quite well.

The Flight from England to Germany.

Mr. Hamel's fine performance on April 17th has a certain poetic justice about it. Mr. Hamel is an Englishman by birth and education, but he is a Schleswiger by parentage, and the Schleswig provinces are to the Scandinavian race what Alsace and Lorraine are to France, so it is somewhat fitting that a Schleswig Englishman should teach us a lesson as to the possibilities of Teutonic aggression by making a non-stop flight from England to Germany. The plans had been very carefully laid for the flight, and to the credit of the British Press be it said no notice was given of the intention to reach Germany, which shows "The Standard" has at any rate greater facilities for keeping its secrets than has Colonel Seely.

Mr. Hamel, with Mr. Dupree of "The Standard" as passenger, left Dover at 12.40 and landed in Cologne at 4.58. The machine was the 80-h.p. tandem Blériot on which the same pair have already made some good flights described in The Aeroplane, though ill-luck of various sorts prevented them on those occasions from reaching their objective. Mr. Hamel had it in mind to reach Berlin without a stop if possible, but presumably the bad weather on Thursday and the approach of evening prevented him from continuing, although he had petrol on board for nearly another two hours.

There was one particular point about Mr. Hamel's performance on which sufficient stress has not been laid in most quarters, namely, that from the time he left Dover till he struck the line of the Rhine was only 3 hrs. 10 min., so that he was actually flying over German territory for over an hour before reaching Cologne. The all-round conditions of the flight were very far from favourable, for the voyagers ran into a hailstorm five minutes after leaving Dover, passed through four others, and towards the latter part of the journey Mr. Hamel was continually obliged to go out of his way to avoid approaching storms. He tells me that at first he tried going between storms, but he found it wiser afterwards to keep to the north and avoid the storm area altogether.

Naturally the flight makes a useful argument to impress on the public the fact that what can be done in one direction can be done in the other, but it should be remembered that this flight was done with a certain amount of assistance from the wind, and that if it had been made in the opposite direction the same distance would probably have taken anything between five and six hours to cover.

As a matter of fact, the prevalence of west winds is in a measure our protection against aeroplanes to-day as it was against Napoleon's fleet at Boulogne a hundred years ago. Against dirigibles, however, this argument may cut in the opposite direction, for it is possible for a dirigible to come over during the night while the wind has dropped, cruise about till its fuel is nearly exhausted, and return to the Continent with the help of the wind, merely using one engine to maintain steerage way. Consequently, the real lesson to be learned is that aircraft can reach this country from Germany, and that our immediate need is for light, fast aircraft for defence purposes. One may fairly assume that the Admiralty, at any rate, is very fully alive to the need for such craft, and is acquiring them as rapidly as possible.

Actually a more valuable lesson was taught by Mr. Hamel's non-stop flight to Dunkirk and back, a feat which was performed in the opposite direction last year by M. Crombez, for in the event of war with Germany Germany's first effort would be to occupy Belgium, and German aircraft of all kinds could easily reach the British coast from Belgium. Those who study such things will notice that the greater number of German strategic railways concentrate not on the French frontier, but on the Belgian frontier. However, to the man in the street Mr. Hamel's latest flight is the more impressive, and the proprietors of "The Standard" are to be very greatly congratulated on the acuteness of mind which led them to fix on this particular flight for demonstration purposes.

In this connection it is worthy of note that on the previous day (Wednesday) M. Daucourt, flying a Borel single-seater fitted with only a 50-h.p. Gnome engine, flew from Paris to Berlin in the day, covering in all a distance of 950 kilometres, which is almost 600 miles, though the distance in a straight line is about 550. M. Daucourt left Chateaufort, near Versailles, at 5.6 a.m., landed at Liege at 7.40 a.m., started again at 9.30, landed at Hanover at 1.15, started again at 3.30, and arrived at Johannisthal at 5.38 p.m., and it is to be hoped that the lesson taught by M. Daucourt by flying from the French capital to the German capital will not be lost sight of by the British Press, for though the fact that Mr. Hamel carried a passenger makes his flight of more immediate military interest, there is no reason why given greater size and power a machine carrying one or two passengers should not do anything that a single-seater can do.



Mr. Dupree and Mr. Hamel before the start.

The change in public interest is shown by the fact that when at Christmas time, 1910, Mr. Sopwith flew an all-British Howard Wright biplane from Eastchurch to a point 170 miles distant in Belgium, the British Press drew no attention to the strategic lesson involved though the distance was only 90 miles less than that from Dover to Cologne.

Mr. Hamel's mount was a new type military Blériot, fitted with an 80-h.p. Gnome engine and Chauvière propeller. He used Wakefield "Castrol" as a lubricant and "Shell" spirit as fuel.

Captain Penfold at Croydon.

A successful balloon ascent and parachute drop from about 4,000 feet was made by Captain Penfold, the Australian aeronaut on the "O.T." balloon at Croydon on Saturday last (19th April). A boisterous westerly wind was blowing, but with the help of a wind screen and willing helpers from the audience, the balloon was inflated. Captain Penfold christened the balloon by pouring some O.T. on it before rising. In the air he did trapeze feats, fired bombs, and cut away with the parachute. He landed safely at the Croydon Corporation Farm, near Norwood.

During the afternoon a competition for models was conducted by the Kite and Model Aeroplane Association. "O.T.," Ltd. presented gold and silver medals. Troops of the St. Lawrence Boy Scouts under Scoutmaster Staite secured Captain Penfold's balloon, and carried it for him to Elmers End Railway Station.

Questions in the House.

Oral Answers. 16 April, 1913.

Royal Flying Corps.

23 and 25. Mr. Joynson-Hicks asked the Secretary of State for War (1) whether his new perfect aeroplane has met with an accident, and, if so, what was the cause; and whether the machine is really in its experimental stage; and (2) whether his statement that the new Army aeroplane was the best in the world was made on the authority of his technical advisers, and whether they still adhere to that description.

Colonel Seely: The hon. gentleman in this question and in question 25, to which I will reply at the same time, is presumably alluding to a new machine of whose successful speed tests I informed the House on the introduction of Army Estimates. This aeroplane is temporarily out of use owing to a breakage in the engine. The description given of it was based on information supplied to me by my principal technical adviser.

Mr. Joynson-Hicks: May I ask whether the machine is not in an experimental stage at the present moment?

Colonel Seely: It has achieved the feats which I have described to the House. I should be very glad if the hon. gentleman would himself take a flight in it.

Mr. Joynson-Hicks: Does the right hon. gentleman want to get rid of me?

Colonel Seely: Oh, no.

24. Mr. Joynson-Hicks asked how much money was spent in the year ending March 31st, 1913, in wages of the actual pilots, the purchase of aeroplanes, and the Royal Aircraft Factory, respectively?

Colonel Seely: It is estimated that the sum of £16,000 was expended in the year ended March 31st, 1913, on the emoluments of officers and others qualified as pilots, £100,800 was expended on the purchase of aeroplanes, including engines and spare parts, and £117,000 on the Royal Aircraft Factory.

27. Mr. Joynson-Hicks asked what proportion of the sum of £190,000 included in this year's Estimates for aviation stores and material is to be allotted for the purchase of aeroplanes?

Colonel Seely: I am not at present in a position to give any information on this subject.

Mr. Joynson-Hicks: When does the right hon. gentleman think that he will be able to give that information?

Colonel Seely: I could not say when I shall be able to give the information, but I will give it in due course.

45. Mr. Joynson-Hicks asked the Prime Minister whether he is aware that there is anxiety in the country as to the number and efficiency of the aeroplanes belonging to the Royal Army Flying Corps; and whether, having regard to the refusal of the Secretary of State for War to give further details of these machines, he will consent to the appointment of a small Committee, independent of the present officials, to make such investigations as would reassure the public?

The Prime Minister: This matter is receiving the continued attention of his Majesty's Government, who are able to avail themselves of the best expert advice on the subject. I see no reason for the appointment of the Committee suggested.

Foreign Aircraft.

26. Mr. Joynson-Hicks asked the Secretary of State for War whether he has yet mounted any high-elevation guns for use against aircraft on the vulnerable portions of our coast-line; and, if not, how he proposes to secure us against foreign aircraft?

Colonel Seely: It is not considered desirable to publish any information on this subject.

Aircraft.

64. Mr. Middlemore asked the First Lord of the Admiralty whether any aeroplanes, hydro-aeroplanes, or other types of aerial crafts, are attached to any of the fleets or squadrons in Home waters; and, if not, whether he will, in view of the fact that the speed of an aeroplane is approximately twice as great as that of any destroyer, take the necessary measures to ensure that our fleets are equipped with these craft for scouting purposes?

Mr. Lambert: This question is being made the subject of investigation and experiment.

Mr. Middlemore: Is the hon. member aware that the First Lord stated last March twelvemonths that he hoped in a few months aeroplanes will be attached to all the fleets?

Mr. Lambert: I can only say we are making experiments. I am sure he would not desire us to take hasty action in this important matter.

Mr. Middlemore: The First Lord then was incorrect last March?

65. Mr. Middlemore asked whether the principal dockyards, arsenals, and naval bases in this country are within the nominal radius of action of the German airships of the Zeppelin type acting from the German coast; and whether our fleets, dockyards, and arsenals are provided with defensive equipment against aerial attack by means either of aircraft or of anti-aircraft guns?

Mr. Lambert: The reply to the first part of the question is in the affirmative, provided that the conditions are favourable. With regard to the second part, defensive measures are being taken for dealing with aerial attack.

Mr. Middlemore: Will the hon. member says what is being done?

Mr. Lambert: I do not think that would be very wise.

Terminological Exactitudes.

It is satisfactory to note that quite a number of Members of Parliament are now finding out for themselves the absolute inaccuracy of Colonel Seely's recent statements concerning the number of machines in possession of the Royal Flying Corps. At the present moment as far as one can gather the effective machines in possession of Squadrons Nos. 2, 3 and 4, R.F.C. are two at Montrose; two at Lark Hill; and four at Farnborough. It would be interesting to know where the remaining hypothetical ninety-three are situated; even allowing for a dozen in flying order at the Central Flying School, there is still a discrepancy somewhere.

Of course, nobody to-day expects any semblance of terminological exactitude from Colonel Seely, but someone really ought to tell him that a hydroplane is not an aircraft, though with his usual airy disregard of facts he persists in speaking of it as if it were.

One of Colonel Seely's latest vagaries in verity is to say that his department has already gone some way in the direction of co-operating with civilian aerodromes. The exact distance at present is an offer of 4s. per night for the housing of military aeroplanes if they happen to have the ill-luck to visit a civilian aerodrome. Considering that the ordinary tenant pays anything from £2 to £4 a week one fails to see the advantage of housing military machines at a rate equivalent to 28s. a week.

Of course, in making these assertions of his Colonel Seely as usual says how glad he is to have opportunities of making his statements.—What an artist in humbug the man is!

The Deperdussin Waterplane.

It is good news to hear that the big Deperdussin waterplane with the 100-h.p. Anzani which was shown at Olympia has been doing exceedingly well in her trials on the Blackwater piloted by Lieutenant Porte, R.N. She has been fitted with two floats instead of the temporary box on which she was shown, and the lateral control is now worked by ailerons. Her speed is said to be well over 60 miles an hour, and she gets off and alights easily, besides having stood up to some fairly rough "landings" while Lieutenant Porte was making his first attempts as a hydro pilot.

The Integral Again.

It is interesting to note that the Chauvière Integral propeller retains its popularity on waterplanes as on land-going machines. Among the waterplanes at Monaco the Astra, Farman, Morane and Bréguet biplanes, and the Morane, Borel, Nieuport, and Deperdussin monoplanes were fitted with Integral propellers, which did considerably well considering the buffeting they received.

Exhibitions at Hendon.

On Thursday afternoon Mr. Spratt made an extensive flight in a Deperdussin monoplane fitted with a new 60-h.p. Anzani engine having semi-circular exhaust pipes similar to those mounted upon the 80-h.p. motor. Although the wind was somewhat tricky, the machine behaved beautifully in the air, and the new engine seemed to be remarkably flexible. Later on M. Verrier took up a Maurice Farman, whose engine had been receiving attention during most of the afternoon.

Saturday afternoon was sufficiently bright and the rain—after recent experience—was hardly worth troubling about, but the wind effectually prevented the cross-country and other serious competition flying that had been arranged in honour of the Lord Mayor's visit to the London Aerodrome. However, an impromptu race of six laps was flown by Messrs. Verrier and Chevillard, the former receiving a start of 25 seconds and winning by ten. But if the afternoon was not a success from the book-maker's point of view, it was phenomenally successful from that of the numerous spectators, who became most un-Britishly demonstrative in their enthusiasm, particularly in the case of Mr. Hamel when he descended after a magnificent high flight lasting more than half an hour, in the course of which he reached a height of over 7,000 feet. His spiral dive to the aerodrome was a most spectacular affair, the wings of his 50-h.p. Blériot showing brilliantly white in the sunshine against the blue sky. Mr. Hamel appeared to have much the same fascination for photographers as the pied piper had for the children of Hamelin; the procession was not without its humorous aspect.

Of M. Chevillard one might well sing, "I know a bank whereon the wild time grows," for it would be difficult to conceive a wilder time than that of his passenger on one of these occasions. M. Chevillard did not mind the wind at all, and his banks on Saturday were assuredly of the most perpendicular.

M. Verrier also was in excellent form, some of those long, low, steady "straights" with which he usually finishes his flights, being particularly wonderful, considering the wind.

Sunday provided the finest day's flying that has been seen at Hendon for very long. At times there were no less than nine machines in the air at once, and fourteen different pilots performed. Mr. Hamel, besides doing his usual fine exhibition flying, went to Brooklands and back, and on his return came down in a perfect spiral from something like 3,000 feet. The only other Blériot out was the little 35-h.p. machine belonging to the Grahame-White School. This machine is actually an old 50 h.p. with a 35-h.p. engine in it, and, therefore, naturally has less reserve power than the machine specially built for this power. Nevertheless, Mr. Cheeseman flew it with excellent judgment and steadiness, attaining a good height, and even venturing across country to the eastward. His first landing was quite perfect and the second was distinctly creditable considering that his goggles had slipped and he had only one eye in working order.

On the Caudrons, Messrs. Turner, Temple and Baumann made excellent flights, M. Baumann going up to 1,500 ft. and making an excellent descent. Mr. Turner took up a large number of passengers. Messrs. Verrier and Chevillard, on the Farmans, both performed with even more than their usual skill, and the only reason for not saying more about them is that one cannot paint the lily.

Mr. Noel made trips on the Grahame-White tractor biplane which was at the Aero Show fitted with floats, and has since been fitted with wheels, and he also flew a propeller biplane which has been fitted with a 70-h.p. Gnome, supplied by the Government. Mr. Manton afterwards flew the latter machine to Farnborough against a stiff breeze which sprung up in the evening, taking about an hour on the journey.

Mr. Harry Hawker was out on the Sopwith-A.B.C. biplane, which holds the British duration record. Mr. Spratt and Mr. Nardini in turn flew the 60-h.p. Deperdussin, this being the latter's first public appearance this year, and he showed that he had lost none of his old skill. Mr. Whitehouse, on the little 35-h.p. Deperdussin, made one of his usual fine high flights, again showing that he is worthy to be classed with our best pilots, and M. Collardeau did some very fast flying round the pylons on the 110-h.p. Bréguet. There was a large crowd present, and among them were many distinguished visitors.

Mr. Gaudron's Balloons.

With aeroplanes and dirigibles occupying the aeronautical stage as they do to-day, the fact comes with something of a shock that Mr. Gaudron of Alexandra Park, possesses, ready for ascent, a fleet of no less than twelve spherical balloons, varying in capacity from thirteen thousand to one hundred thousand cubic feet, the latter of which, "Mammoth II.," is capable of lifting fifteen passengers. The name of Gaudron has long been associated with aeronautical sport, and it is pleasant to learn that these latter developments in the aerial world so far from putting him out of action, have had rather the contrary effect, and that the popularity of his exhibitions with free and captive balloons and parachutes tends not to diminish but to increase.

The Aeroplane in War.

Messrs. Henry and Maurice Farman have kindly sent through Mr. Dick Farman a very interesting photograph taken from the Fort of Bizani, close to Janina, a few days prior to the taking of the city by the Greeks, showing a M. Farman aeroplane piloted by Lieutenant Sakoff approaching the fort. Though extremely small the bursting of shrapnel some distance below the aeroplane can be distinctly seen, showing that the pilot received a warm reception. The information given by Sakoff was very valuable to the besieging army, and it is reported that bombs dropped by him were quite effective. The pilot, after covering about 180 miles, descended without injury to the machine except for a leaking petrol tank.



The 63-h.p. Morane-Saulnier biplane and the 160-h.p. Borel monoplane on the quay at Monaco.

The Week's Work.

MONDAY, April 14th.

R.F.C., Montrose.—Capt. Becke, Capt. Longcroft, and Lieut. Lawrence flights on B.E. machines. Lieut. Martyn on Maurice Farman. Flying curtailed owing to gusty wind.

Hendon.—At Grahame-White School, Mr. Manton on No. 2 B machine. Mr. Lan-Davis and Mr. T. Bayetto straights on same under Instructor Manton.

At Depperdussin School, Lieut. Bourke 15 mins on No. 3, Mr. Bauman 5 mins straights. Mr. Miller (new pupil) joined school.

At Temple School, under Mr. J. L. Temple, M. Lance and A. Vaile 10 mins straights on Blériot No. 2.

At W. H. Ewen School, Mr. Turner test on 35-h.p. Caudron No. 1. M. Zubiaga good straights. M. Baumann test on 35-h.p. Caudron No. 2. Lieut. G. Adams short flights. Mr. L. H. Jagenberg (new pupil) first instruction.

Brooklands.—At Vickers School, Mr. Knight on biplane, then with Mr. Wight. Messrs. Wight and Waterfall alternately circuits and eights on biplane.

At Bristol School, Mr. Merriam test, then with Mr. Strain, Lieuts. Hosking and Duncan, and Mr. Grey. Lieut. Peirse eights and glides.

Dover.—Mr. Hamel arrived with Miss Trehawke-Davies from Shoreham; 75 miles in about 65 mins.

TUESDAY, April 15th.

R.F.C., Central Flying School.—Freshening S.W. wind. Clear and fine in forenoon. Very strong S.W. wind during remainder of the day. On Avro 430, Major Fulton 10 mins alone, with A.M. Harrison 10 mins. On Maurice Farman 411, Sergt. Robbins 22 mins; A.M. McNamara 55 mins. On Maurice Farman 418, Major Gerrard 5 and 10 mins alone, with Capt. MacDonell 35 mins; Capt. Salmond, R.F.A., 20 mins. On Maurice Farman 425, Major Trenchard 12 mins alone, with A.M. Gaffie 25 mins, with A.M. Cowton 6 mins; A.M. Higginbottom with A.M. Corner 10 mins, with A.M. Gibbert 10 mins. On Maurice Farman 427, Sergt. Stafford 19 mins; Sergt. Kemper 56 mins. On Maurice Farman 429, A.M. Collis with Telegraphist Petty Officer Hogan left school at 6.30 a.m. and landed at Grendon Underwood, in Buckinghamshire, about 8.30 a.m., having lost their bearings. Machine slightly damaged in landing, dismantled and brought back by road. On B.E. 416, Capt. Salmond 5 mins alone, with Capt. Salmond, R.F.A., 28 mins.; Lieut. Dawes 45 mins. On B.E. 417, Capt. Salmond 9 mins. alone, with Capt. Salmond, R.F.A., 12 mins; Lieut. Thompson 9 and 20 mins. On Short 402, Major Gerrard 10 mins; Sergt. Vagg 15 mins.

R.F.C., Montrose.—Reconnaissance by Capt. Becke with Lieut. Lawrence, and Capt. Longcroft with Lieut. Joubert on "B.E.'s." Major Burke on B.E. Lieut. Martyn on Maurice Farman, landed at Lunan with broken crank-shaft.

Hendon.—At Grahame-White School, Mr. Bayetto straights on No. 2 B machine. Sir Bryan Leighton (new pupil) rolling on No. 7 with Instructor Manton. Mr. Major straights.

At Depperdussin School, Mr. Brock flew No. 5 machine (35-h.p. racer) once from Brooklands in 17 mins. Strong wind half way across ran into calm air, which shot him up 300 ft.

At W. H. Ewen School, on 35-h.p. Caudron No. 1, Messrs. Torr and Stewart circuits. Mr. Turner on 60-h.p. Caudron with Lieut. G. Adams.

Brooklands.—At Vickers School, Mr. Barnwell on biplane with passenger, Messrs. Waterfall and Wight alternately circuits and eights in 12-mile breeze. Later, Mr. Barnwell with Lieut. Blatherwick, and a prospective pupil.

At Bristol School, Mr. Merriam test, then with Mr. Strain circuits and landings; later behind Mr. Grey for straights and with Lieut. Hosking. Mr. Bendall testing. Then with Mr. Strain, Mr. Grey, and Lieut. Hosking.

Dover.—Mr. Hamel testing 80-h.p. Blériot and doing alarming banks in a gale.

WEDNESDAY, April 16th.

R.F.C., Central Flying School.—Strong, bumpy, S.W. wind. Heavy showers all day. No flying at School. Wind dropped and rain ceased in evening, then splendid moonlight night. Lieut. Cholmondeley with passenger arrived from Lark Hill about 9.20 p.m. on Maurice Farman 214, made splendid landing and returned later.

R.F.C., Montrose.—Capt. Longcroft on B.E. in gale. One involuntary landing due to engine trouble near sea coast. Mechanics fitting new engine to Maurice Farman at Lunan.

THURSDAY, April 17th.

R.F.C., Central Flying School.—Fine, clear and calm till 11 a.m., then showery and freshening S.W. wind. No flying. All officers, N.C.O.'s and men finishing course of instructions this day, left the school for respective headquarters.

R.F.C., Montrose.—Capt. Longcroft on B.E. with Lieut. Joubert de la Ferté as observer to Frischhiem. Same pilot with Lieut. Pepper as observer to Brechin. Major Burke and Lieut. Lawrence short flights on B.E. machines.



Among the "Bristolians" on Salisbury Plain.—Left to Right: in the machine—Mr. Pixton, Lieut. Bromet, R.N., Mr Tod; standing—Mr. Harrison, Mr. Fellow, Lieut. Marshall, M. Jullerot, Lieut Chidson, and Herr Paschen.

Hendon.—At Grahame-White School, Mr. C. Lan-Davis on No. 2 B. Mr. Major and Mr. A. G. Power on No. 7. Sir Bryan Leighton and Mr. Tone Bayetto all out under Mr. Manton.

At Deperdussin School, Mr. Whitehouse on No. 5 for first time. Mr. Spratt on 60-h.p. two-seater, new engine mounted, more powerful than old 60. Reached 1,150 feet in bad wind, and at third flight went across country.

At Bleriot School, Mr. Seymour Metford on No. 3. Messrs. R. Desoutter and Reilly up.

At Temple School, under Mr. Temple, Messrs. Vaile, Renny and Lance 20 mins each on Blériot No. 2. Mr. Ritchie 10 mins rolling.

At W. H. Ewen School, M. Baumann on 35-h.p. Caudron No. 2. Messrs. Prosser, Goodden and Gist straights, Lieut. G. Adams rolling and short flights. Mr. Pendlebury rolling. Lieut. W. C. Hicks (new pupil) first instruction. Mr. Turner testing 35-h.p. Caudron. Messrs. Stewart and Zubiaga circuits. Mr. Turner several passenger flights on 60-h.p. Caudron. Mr. Torr took his brevet in good style.

Brooklands.—At Vickers School, Mr. Barnwell on biplane with Mr. André (new pupil), Mr. Knight testing No 3 mono. Lieut. Blatherwick straights. Messrs. Waterfall and Wight on biplane doing good eights at 400 ft. Mr. André promoted to front seat in first morning. Mr. Waterfall on mono No. 3 got off ground at first attempt. Messrs. Barnwell and Knight on mono No. 5, former (with passenger), reaching 1,500 ft. Lieut. Blatherwick promoted from No. 3 to No. 5.

At Bristol School. Mr. Bendall testing on two machines, then with Mr. Strain, Mr. Grey, Mjr. Merrick and Lieut. Hosking straights. Mr. H. Cogan straights. Lieut. Edward McClellan circuits, Lieut. Peirse eights.

Salisbury Plain (Bristol School).—Weather improved. Mr. Pixton out early for trial. Then tuition to Mr. Marshall. Round Fargo and circuits. Mr. Pixton later on new tractor biplane. Mr. Tod alone on side-by-side mono. Wind rose considerably with storms of rain, and work had to be abandoned.

Dover.—Mr. Hamel left at 12.45 with Mr. Dupree on 80-h.p. Blériot in a S.W. breeze and flew to Cologne.

FRIDAY, April 18th.

R.F.C., Montrose.—Capt. Longcroft on B.E., and Lieut. Martyn on Maurice Farman out in rainstorm.

Brooklands.—At Vickers School, Mr. Barnwell on biplane, the with Mr. André. Mr. Knight (pilot) testing No. 3 mono. Mr. Waterfall straights at 30 ft. Mr. André straights in bumpy wind with Mr. Barnwell. Lieut. Blatherwick on No. 3. Mr. Barnwell on biplane with Messrs. André and Wight in wind.

At Bristol School, Mr. Merriam testing two machines, then with Major Merrick. Mr. Grey, Mr. Strain, Lieut. Peirse eights in bumpy wind. Lieut. Edward McClellan and Lieut. Cogan straights. Mr. Merriam with Lieut. Hoskin.

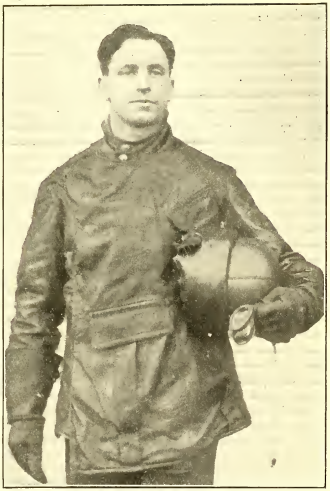
SATURDAY, April 19th.

R.F.C., Montrose.—Capt. Becke on B.E., and Lieut. McLean on Maurice Farman with Sergt.-Major Measures, Sergt.-Major Fletcher, and Sergt. Mullen as observers.

SUNDAY, April 20th.

Hendon.—At Deperdussin School, Mr. Whitehouse 25 mins on No. 5. Mr. Spratt on 60-h.p. two-seater at 600 ft. across to Harrow. Signor Nardini with Capt. Tyrer and three other passengers on same.

At Temple School, Messrs. A. Vaile and M. Lance 10 mins straights on Blériot. Later Mr. George Temple exhibition flights on 35-h.p Caudron, remaining at 600 ft for 15 mins, finishing with good glide.



Leading Seaman Ashton, a new C.F.S. Pilot, who took his certificate in excellent style after only 1 hr. 48 mins. tuition on a Short biplane.



Two views of Fischer's 160-h.p. Farman at Monaco before its smash.

At W. H. Ewen School, Lieut. G. Adams rolling on 35-h.p. Caudron No. 2 under M. Baumann. Mr. L. Turner good flights on 60-h.p. Caudron with passengers. M. Baumann on 35-h.p. Caudron to 2,500 ft., finishing with long glide.

At Grahame-White School, Mr. Cheeseman flying excellently on 35-h.p. Blériot and Messrs. Noel and Manton on G.-W. biplanes.

Brooklands.—At Vickers School, early in morning Mr. Barnwell and Lieut. Blatherwick on biplane, Mr. Waterfall alone at good height doing eights in bumpy wind, and finishing with good glide. Mr. Barnwell with Lieut. Blatherwick, and Mr. Knight with Mr. Waterfall circuits. In afternoon Mr. Barnwell flying No. 5, then on biplane carrying passengers. Mr. Knight on biplane carrying passengers.

At Bristol School, 5.10 a.m., Messrs. Bendall and Merriam testing. Mr. Bendall tuition to Mr. Strain, Mr. Merriam with Lieut. Hosking and Major Merrick. Mr. Merriam in afternoon giving an exhibition flight, with Lieut. Strong (prospective pupil). Afterwards with Lieuts. Broder, Hoskin, and Cogan. Mr. Bendall exhibiting and with Lieut. Edward McClellan. Mr. Merriam finished flight in stiff breeze.

The Man Who "Casts Clean Crank-Cases."

Nine years ago Mr. Robert W. Coan started up a small aluminium foundry at 219, Goswell Road, E.C., employing sixteen men. The original foundry has now become but a tiny corner of a vast establishment, in which more than two hundred men find themselves exceedingly busy. Nor is the limit of this extending process yet in sight, for each year brings a new access of demand for aluminium and aluminium-alloy parts, and work has a way of discovering the man who knows how to do it.

Crank-cases form the staple article, from the little pocket affair that belongs to Wall's "Auto-wheel" to the massive case containing the weighty crank-shaft of a huge motor-tractor. When the manufacture of aero-engines on a serious scale begins in England, it is a fairly safe prophecy that Mr. Coan's 30,000 square feet of foundry will prove insufficient, as the smaller areas have done in years past. But though crank-cases are the main product of this foundry, they are not by any means the sole product.

Article after article which has been considered to belong entirely to the realm of copper or brass, or even steel and iron, has been transferred to that of aluminium, and has been found to "render" in that metal as well as in the original one. The bearing of this fact upon the craft of aeroplane construction is obvious, and now that alloys have been developed, having strengths and sea-resisting qualities hitherto unthought of in connection with aluminium, the outlook for the efficient alloy-founder is something more than bright—in fact, the founding of these new alloys will give rise, practically, to a new industry.

Mr. Coan has dealt with its alloys, since he began dealing with aluminium itself, about fifteen years ago, and his experience will stand him in good stead when the rush of this new development begins, for aluminium is a tricky metal, and the alloy-children appear to take after their parent.

The Coan business is a one-man affair, and of its founder and proprietor one may repeat with justice the short sentence that contains the highest praise a technical man may covet: "he knows his job."

Of Interest to Modelists.

J. Bonn and Co., Ltd., of 97, New Oxford Street, London, have issued a most interesting and complete illustrated catalogue of the various new materials used in the construction of model aeroplanes; wood, metal and elastic; but more fascinating than these are the miniature parts depicted, propellers of all the celebrated "grown up" types, rubber tyred wheels and tiny gear wheels, aluminium and brass sockets, lugs, etc., and several sorts of mechanisms for helping the elastic motor to perform its work with the greatest efficiency. The scale of prices also appears to be on a par with the scale of these parts. Altogether the catalogue, which is prettily got up, is extremely desirable.

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If you are in doubt as to the best route from your particular district, send your name and address to the London Aerodrome Offices, 166 Piccadilly, W., where you will be able to obtain the fullest particulars.

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Wires: "Claudigram," London.

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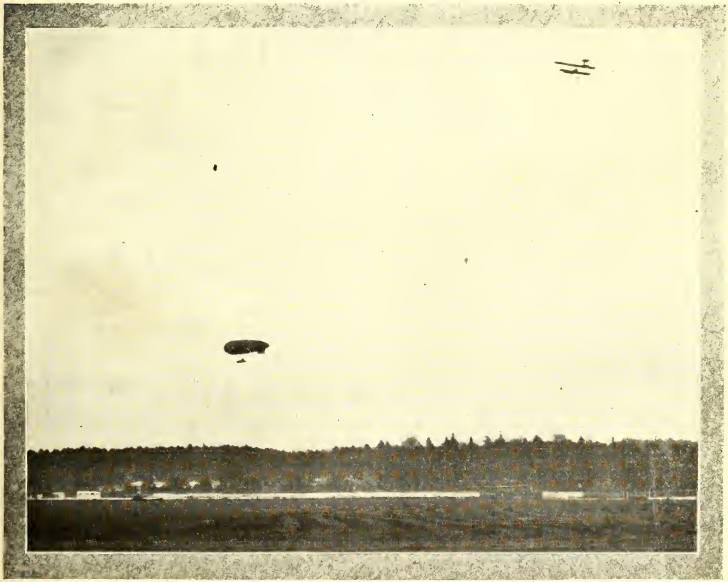
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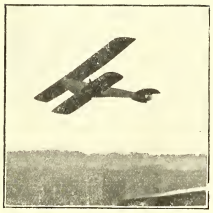
Edited by C. G. GREY. ("Aero Amateur")

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AIRCRAFT.



Above are shown three types of aircraft photographed at Brooklands on Wednesday of last week. On the left is seen H.M.S. "Beta," with Lieut. T. G. Hetherington in command. In the right top corner is Mr. Merriam on a Bristol biplane, and between the two is the balloon in which Mr. James Radley and Lieut. Waterlow, R.N., arrived a few minutes later.



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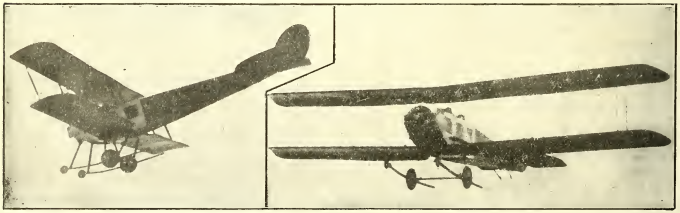
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Lord Montagu and Colonel Seely.

The little incident last week, in which Lord Montagu of Beaulieu and Colonel Seely were concerned, is not without humour, though, unfortunately, the letter which Lord Montagu wrote after his visit to the War Office provides Colonel Seely's supporters with a political weapon which they can use with some effect.

It will be remembered that Lord Montagu stated at a public meeting that the War Office is in possession of only 43 aeroplanes. The statement, being made by a Peer of the Realm, naturally carried considerable weight, and was largely quoted by numerous papers. Thereupon Colonel Seely invited Lord Montagu to the War Office, displayed certain documents for his edification, presumably expatiated to him in his usual fluent and eloquent manner, and finally so convinced him that he wrote the letter which appears in the first section of "Questions in the House," on page 509 of this issue.

What documents were produced for Lord Montagu's benefit I am naturally not in a position to state, but, reading between the lines of his letter, one may assume that they included a fairly complete catalogue of the machines bought by the War Office during the past two years. Now, though Lord Montagu has been a member of the Royal Aero Club almost, if not quite, since its foundation, and has always been one of the keenest supporters of aviation in this country, his multifarious duties in the House of Lords, as the owner of various estates in which he takes the close interest which the best class of lauded gentry in this country do even more than in any other, and as the proprietor and editor of that excellent weekly motor paper, the "Car Illustrated," naturally make it impossible for him to have the same intimate knowledge of the details of aircraft as those who devote their whole time to the subject. Therefore, one may easily imagine that a frank and straightforward English gentleman of his type would easily be persuaded into believing almost anything supported by documentary evidence if it was brought to bear on him by so astute a lawyer as "Colonel" Seely—for it must be remembered that the Secretary of State for War is a solicitor and politician by trade, and that his military title is merely founded on the fact that he has been the colonel of a regiment of yeomanry. If a bank clerk hints that he would like to be called "Captain" on the strength of his commanding a company of Territorials he is jeered at, but he has at least as good a right to his title as has the present Secretary of State for War, and at any rate an amateur soldier is less likely to be harmful as a captain than as temporary head of the British Army.

Still, be that as it may, Lord Montagu has evidently been "fully convinced" by sophisticated arguments which would not have satisfied him so easily if he had been able to press for further details as to whether the various machines specified in those documents are actually fit for immediate service.

Fitness for Active Service.

No one denies that the War Office has at its call more than 101 aeroplanes available for use in some way or other. The whole point is that there is nothing like that number fit to go on active service at the moment. It is very doubtful whether there are as many in the whole of Great Britain which could be made fit for active service in a month's time against a continental army equipped as several of them are at the moment, even supposing that all flying were stopped during that period so that the number should not be reduced by breakages during practice.

It should be noticed that Lord Montagu is careful to refer to aeroplanes "available" at present, as differentiated from those "stated on March 19th," to be "in the possession of the War Office." He does not say that he has been convinced that there were then 101 aeroplanes fit for service in the hands of the Royal Flying Corps, which is quite another proposition. Then and now the only question of interest is how many aeroplanes fit for active service are in the hands of existing squadrons of the Military Wing, Royal Flying Corps, and what is the strength and efficiency of those squadrons in trained pilots who have had regular practice on machines of the same type as they will be asked to fly on active service.

The proposition, for which Colonel Seely is by inference responsible, that if war broke out, officer-aviators would be ordered to fly in all weathers on machines which are not only considered dangerous in fine weather in time of peace, but on which they have had no previous practice, is the most heartless, cold-blooded, life-wasting idea which could be put forward by an amateur soldier in a futile attempt to imitate the ruthlessness of a Bismarck. It may have been policy to throw away thousands of lives in a day at Königgrätz, or at Port Arthur, or at Scutari; but those lives were carefully preserved beforehand for the purpose. Which is altogether a different method of procedure from compelling army aviators to fly throughout a campaign on machines which Government experts now regard as dangerous, and to increase that danger multifold by manning those dangerous machines with pilots who have never been allowed to practise on them. If one priceless piece of information were required at any cost in the shortest possible space of time it might be permissible to ask for a volunteer to fly a machine which was very fast and admittedly dangerous, like some of the racing freaks flown by men of the type of Védrines, Perreyon, or Legagneux, always supposing such a machine had been acquired during the campaign and no pilot had had opportunities of practising on it in peace, but under ordinary circumstances an air scout ought to fly only a machine to which he is thoroughly accustomed, and one which is in perfect condition. His work is then very little, if any, more dangerous than that of a cavalry scout.

Judging from the way he talked about "brave young men" and "opportunities for daring deeds," one would think that every scouting trip on an aeroplane seemed to Colonel Seely as dangerous as a "forlorn hope" in advance of a storming party, and by his handling of the equipment of the Royal Flying Corps he has nearly succeeded in making it so.

The Real Number of Aeroplanes.

A simple and fairly accurate way of arriving at the number of aeroplanes really fit for active service at short notice is to take the number of machines delivered by each firm within, say, the last 12 months, and to calculate back from them to the R.F.C.

Following hereafter is an approximately correct list, which is probably not more than 5 per cent. to 10 per cent. out in the aggregate, and it excludes all the very old machines such as the old Bristol and Short and Farman box-kites, Major Fulton's and the late Mr. Cammell's old Blériots, the late Captain Hamilton's old Deperdussin, the original Paulhan-Fabre, and so forth, though it must be remembered that some of these have reappeared as "B.E.'s," having been "repaired" or "reconstructed" at the Royal Aircraft Factory.

This is the list, arranged alphabetically:—

	Supplied	Supplied or under Repair	Available for Flying
"B.E." biplanes, built in R.A.F.	8	4	4
Blériot monoplanes (under ban and not available)	2	—	—
Bréguet biplanes	6	4	2
Bristol "B.E." type biplanes	5	—	5
Bristol monoplanes (under ban)	4	—	—
Caudron biplanes	2	—	2
Cody biplanes	2	2	—
Deperdussin monoplanes (under ban)	5	—	—
H. Farman biplanes	12	3	9
M. Farman biplanes	22	7	15
Flanders monoplanes (under ban)	4	—	—
Grahame-White biplanes (various makes)	6	—	6
Grahame-White monoplane (Nieuport) (under ban)	1	—	—
Martin-Handasyde monoplane (under ban)	1	—	—
Nieuport monoplanes (under ban)	5	—	—
Roe biplanes	7	3	4
Short biplanes (tractors and "38" type	9	3	6
Vickers "B.E." type biplanes	2	—	2
	103	26	55

The broken machines I have merely set down as the numbers I have known to be broken; some may have been repaired, even a greater number may have been broken, but the figures represent a very moderate estimate of the number of any one type under repair at any given moment. The Bristol and Vickers "B.E.'s," the "38" type Shorts, and a large proportion of the H. and M. Farmans have only been delivered quite recently and have not had much chance of being smashed.

It will be seen that the total is not very far wide of Colonel Seely's alleged 101 of March 19th. But the important point is that nearly all the H. Farmans and many of the M. Farmans, Shorts, Bristols, the Grahame-Whites, the Caudrons, and the Roes, and, I think, the Vickers, have been delivered since his statement was made. The number 101 could only be reached by counting his chickens before they were hatched.

He may have counted the French Farmans, or, what is quite likely, the "expert advisers" at the Royal Aircraft Factory may have counted in a number of "B.E.'s" which have been hung up at various works for months in an almost completed state, simply waiting for special fittings on which these jacks-in-office insist. For example, they specify certain steel for wire strainers. Ordinary strainers of equal strength would add at most 3 lbs. weight to the whole machine, and the particular steel required is almost unobtainable except by ordering it to be made in tons, which an aeroplane constructor cannot do unless assured of continuity of orders. Still, knowing that the machines could be finished in a few days if the makers were allowed reasonable latitude, as they would be if war broke out, presumably all the "B.E.'s" on order, including the six from the Coventry Ordnance Company, a certain number to be made by Saunders, of Cowes, and the five from Handley Page, Ltd., as well as the balance of the Bristol and Vickers orders—about a dozen more—were counted.

Colonel Seely's present state of jaunty optimism is probably due to the fact that he is reckoning on these, plus another 18 or 20, the balance of those on order from A. V. Roe and Co., Short Bros., and the Aircraft Manufacturing Co. (Farmans), being delivered in the next week or two. Let us hope he may get them, for he needs them badly, because the 55 I have shown as "available for flying" are not fit for use in war for the following reasons:—

Firstly, the "B.E.'s" built at the R. A. F., quite eight of the M. Farmans, about four of the H. Farmans, the two Bréguets, the remaining one of the four original Roes, and at least three of the Shorts have had so much knocking about at the Central Flying School, on Laffan's Plain, on Salisbury Plain, and on the way to Montrose, that it would be nothing short of criminal to allow them to be used on active service. That reduces the total legitimately available for war by 22. Then of the Grahame-White fleet, the ancient "Wake-up-England" Farman, the 50-h.p. school biplane, the 70-h.p. Hendon-built biplane for which the R.A.F. supplied the engine, and the 60-h.p. tractor which was shown at Olympia with floats, are obviously only intended for school work, and could not possibly be put in the air against a modern army, or in a big wind under any circumstances. The other two, namely, the 80-h.p. H. Farman, the first of its type, which Mr. Gates flew from Paris, would be all right with a bigger rudder as the later machines have, and the other, bought from the executors of a deceased Greek lieutenant—which accounts for her somewhat garish colour scheme—is quite a modern machine. The two Caudrons are only 35-h.p. school machines.

Therefore, from the 55 "available" machines 28 must be deducted, leaving actually 27 aeroplanes of modern construction, and of a type on which the flying officers, R.F.C., have had reasonably extended experience such as would justify their superiors in ordering them fly these machines on active service. That is to say, we are at the moment able to equip one squadron, and one only, with its full complement of aeroplanes and remounts, and still have half a squadron over.

Juggling with Figures.

As I have pointed out, these figures can only be approximately correct, because two or three or half a dozen machines may be broken up, or as many new ones may be delivered by the time these notes appear, but accepting them as such we find that some interesting facts emerge.

(*a*) The figure 103 shows about how Colonel Seely obtained his alleged 101.

(*b*) The figure 55 "available" shows that Lord Montagu was very nearly right when he mentioned 43 as being actually in possession of the Army, for fully a dozen have been delivered since he could have obtained the figures on which he made his statement.

(*c*) By adding the 103 to the 43 or 80 still on order one obtains the 146 which Colonel Seely stated on March 19th he hoped to have by some date in May.

(*d*) By deducting the 22 monoplanes, the 26 wrecks (more or less), and the 28 school-worn machines from the 103, we find the 27 machines ready at the moment for active service.

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Juggling may be honest or dishonest. It may show "how it is done," or it may be of a kind analogous to the "three-card trick." It is distinctly in the latter category that one must place such juggling with figures as it used to persuade the British taxpayer that the Military Wing, R.F.C., is in a fit state to take the field as a useful adjunct to the Expeditionary Force. Not to put too fine a point on it, those who supplied Colonel Seely with the misleading figures and fictitious facts to which he gave utterance in his speech on the Army Estimates have attempted to bamboozle the British Public.

If Colonel Seely is cognisant of the facts he is obviously unworthy of his position. If he is not cognisant of them his dependence on unworthy subordinates and his acceptance of figures and advice from utterly unreliable sources—I could mention one astounding instance—show that he is equally unfit to control the land defences of this country. The whole story of the formation and equipment of the Royal Flying Corps up to the present day calls as urgently for a public inquiry as did the matter of the Marconi deal.

The really good men who suffer from the present state of affairs are helpless. They are bound in honour not to speak of the things they know, besides which the officers of the R.F.C. are bound by the King's Regulations and the respectable employees at the Royal Aircraft Factory are under the Official Secrets Act, but released from secrecy as they might be before a Royal Commission some of them could tell stories which would quickly cause a wholesale clearance in certain quarters and a thorough reorganisation of the whole system of buying and using aeroplanes in the Army.

The Public Interest.

Colonel Seely has now been driven into such a corner by the pertinacity of Mr. Joynson-Hicks that his replies are reduced to two formulæ, either "It is not in the public interest" to give such and such information, or "I have nothing to add to my reply" of such and such date. Both replies are opposed to the truth.

The truth is that in the public interest the real state of the Royal Flying Corps should be declared, and that much should be added to all Colonel Seely's previous statements. These replies of Colonel Seely are merely the bluff of a weak man trying to hide someone's dereliction of duty. This barrier of secrecy which is supposed to hide the strength of our aerial defences from the prying of foreigners is in fact put on to cloak its weakness from the honest inquiries of those of us who wish to see the Royal Flying Corps the finest air corps in the world, and who would quickly raise such a storm as would clear out the gang who are responsible for the present state of affairs but for the way Colonel Seely has shielded them, or has been used by them as a shield, as the case may be.

When Mr. Joynson-Hicks assumed that Colonel Seely was "acting on information wrongly supplied by his officers," I take it that he used the word "officers" in its legal and not in its strictly military sense, and his assumption is probably justified, though the ambiguity of the word allowed Colonel Seely to score one of those political points which he is so fond of making by twisting an opponent's meaning to his own use. At any rate, when Mr. Joynson-Hicks assumed that Colonel Seely was being misled, he was letting him down lightly where a less magnanimous opponent would have made him personally responsible for the way in which the House, and through it the British Public, had been misled.

However, there is some satisfaction in having forced a Minister of State into such a corner that to save his department or himself from exposure he must refuse to answer at all. Mr. Joynson-Hicks is to be sincerely congratulated on his good work, and not the least grateful of those who have followed his campaign are the pilots of the Royal Flying Corps whose lives in peace, and whose efficiency in war depend on the R.F.C. being equipped in a manner worthy of the British Army.

The Equipment of the Military Wing.

The immediate question of the moment is the equipment of the Military Wing, R.F.C., with aeroplanes. If one takes the 28 school-worn machines and the 27 really good modern machines they only make 55. The Central Flying School must have at least 30 of these, so that there will only be 25 left for the three squadrons. That means one squadron fully equipped (18 machines, including reserves) and one half equipped. Even if one brings the monoplanes into service again, at least 11 of the 22 are not now fit to be used without entire rebuilding—a two months' job—and anyhow, I gather that an attempt is being made to plant the whole batch of Nieuports on to the Naval Wing, so that we shall have, say, 25 biplanes and 11 monoplanes in all. Add to this the 40 machines still on order, and our total strength for a mid-summer cannot be as much as the 86 machines which Colonel Seely claimed a month ago. Just enough for four and a half squadrons at full war strength! And, now mark this, out of all that lot there is not one really fast single-seater scout, there are hardly any capable of a speed of 70 miles an hour, the majority do not exceed 65 miles per hour, and very many will not exceed 55 miles per hour. There is an air fleet to put up against France and Germany!

Further, there is no sign of improvement in administration. Machines on order are still being delayed by idiotic requirements from the Royal Aircraft Factory. As an example I may quote one place in the B.E. specification where a radius rod is held at one end by an ordinary mild steel bolt, while at the other end a bolt of equal size is specified in the same special steel which is causing all the delay over the wire strainers. Also, no continuity of orders is yet given. Firms are pressed to deliver in a hurry, aspersions are cast on their business ability because delays occur, and then when all the orders are executed no fresh orders are given.

"Why has M. Chevillard gone back to France?" I asked a fellow-employee of his at Hendon. "*Pas de commandes*," was the reply. Twelve Henry Farmans delivered in a month, twenty-two Maurice Farmans in about six or seven months, and no more orders. The same experience as A. V. Roe & Co., Ltd. had from July 1912 to January 1913. Excellent machines, excellent service, entire satisfaction—and six months without orders. The Bristol Company had much the same experience months before that. Who on earth can organise and finance a business to stand that sort of thing? And on the other hand, where is the difficulty in giving a good reliable firm a written undertaking that at least so many machines will be bought from them during the next six months.

Even if, as General Henderson said, "spasmodic money means spasmodic orders," surely there is someone in the War Office with sufficient power to guarantee a sufficiency of orders to ensure the continued existence of firms who can do reliable work so that an adequate and steady supply of machines for the Royal Flying Corps can be assured. If not, it is only a further argument that the whole thing needs re-organising.

Once more let it be stated—There must be an Air Department at the War Office. The lead of the Navy must be followed.—C. G. G.



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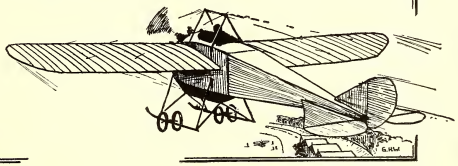
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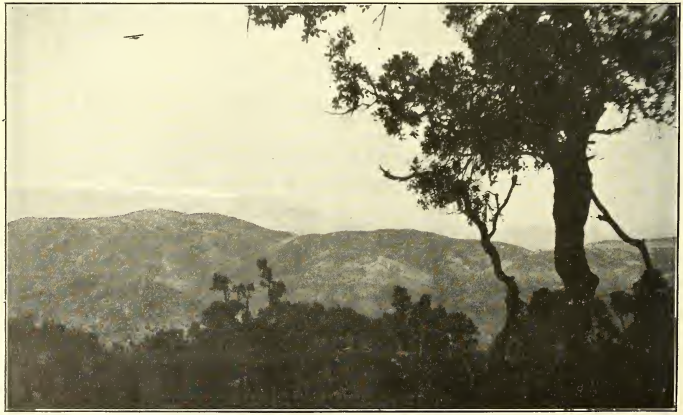
A further point in the proportion of things aeronautic apparently escaped the attention of the critic. No nation, if it desires to retain a position in the air equal to that which it holds on the earth beneath, can afford to neglect one type of aircraft because the other class has received full attention. France is pre-eminent in aeroplanes, Germany in dirigible balloons, and Great Britain in neither. Yet all three nations are wrong. There is an analogy between aircraft and ships of war. None would argue that because a Dreadnought is of high excellence as a fighting ship a submarine therefore ceases to have any adequate object in life. Each class of ship has its clearly defined duties in the scheme of war, and so has each class of aircraft. The aeroplane undoubtedly has the advantage of speed. It is less cumbrous, and is easier consequently to transport from place to place. In the air it can be manœuvred with greater facility than can a dirigible. It is less expensive to construct, and can be replaced in a shorter space of time at a much lower expenditure. On the other hand, the dirigible can remain in the air for very much longer periods of time without any loss of efficiency at all. For night work it stands alone, and, in the days to come, those who fly by night will have a great power in the land. In absolute silence a dirigible can float over the most closely guarded camp or fortified position when the world is dark, with the probability of escaping observation altogether. There are many other points of difference in matters of efficiency between the two classes of aircraft, but the few that have been enumerated will suffice to illustrate the argument.

It has frequently been pointed out that a fast aeroplane has a dirigible balloon at its mercy. It is probably so if the aviator cares to proceed to extreme measures. If this be the case, it does not provide an argument against the construction of military power-driven balloons; it merely shows the necessity of building more aeroplanes to protect the larger vessels from such attacks. A fleet of dirigibles without a protective screen of aeroplanes would be, during daylight operations in an almost impossible position. Whatever the weather might be, if the dirigible be capable of navigation at all, it would be exposed to deadly attack by aeroplanes.

This again demonstrates the existence of an almost calculable system of proportionate strengths in the aerial fleets of the nations. A nation cannot construct twenty dirigible balloons without at the same time bringing its aeroplane fleet to a proportionate strength. The limit of size of that fleet of aeroplanes is regulated by the extent of the national army and navy. The number of aircraft does not depend on the fantastic imagination of a Government official, but on a sort of natural law.

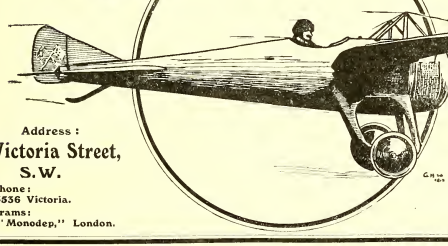
The rôle of the aeroplane in war is clearly defined so far as present conditions are concerned. It is essentially a scouting agent. The precise sphere of action of the dirigible, on the other hand, has not been decided with any sort of definity. It will, it is to be presumed, assume the offensive. It cannot in the nature of things restrict its activities to the carrying out of extended reconnaissance.

If, therefore, it is accepted that the dirigible balloon is an offensive weapon in the active sense, then it is possible to lay down some sort of standard of strength. The British Navy is of great size, because of the wide dispersion of the Empire. The Lords of the Admiralty are disposed to treat the question of dirigibles as one peculiarly affecting the naval service. There is no reason to doubt the wisdom of this assumption. The present naval strength of Great Britain is in the pro-



Lieutenant Sakoff of the Greek investing army flying on a Maurice Farman biplane near Janina before that city fell. At this moment he was under fire. The Photograph was taken from the Fort of Bizani.

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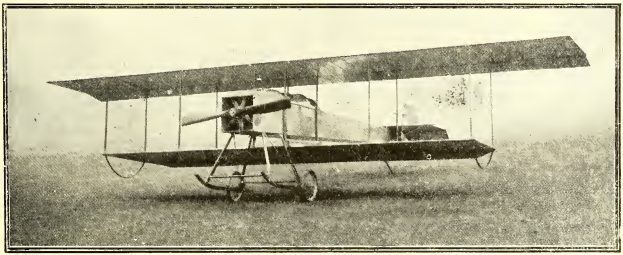


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portion of three to two to the next naval Power. Could not the same standard obtain as regards dirigibles? That is, if the dirigible balloon is accepted as an offensive weapon. If it is not, then the proportion of aeroplanes to armed forces mentioned in previous articles is still effective.

In the preceding article to this, I spoke of 192 aeroplanes being required in the British Army if one accepted the Italian proportion of aeroplanes to men. It is necessary to explain why this hypothetical air corps of which I spoke should be up to war strength at all times. The 800,000 men given as the number of the British Army under war conditions includes all manner of reserves, and is to a large extent a paper force. The infantry and cavalry of the Regular Army can be supplemented by such reserves as the Special Reserve and the Territorial Force, and that without any very serious loss of efficiency. But it is not possible to have any adequate second line to the specialised services. There are, it is true, Territorial Artillery and Engineers, but they are certainly incapable of efficient independent action. By that I mean that, though their personnel might be employed as drafts for the Regular Forces, it would be unwise to use a Territorial battery as a separate unit. It is, of course, a debatable point, but I am following the great mass of professional opinion.

The Royal Flying Corps is a highly specialised arm of the services. Its personnel has to attain a high stage of proficiency in a hazardous art, and at the same time it must have a deep knowledge of those principles which control the movements of large armed forces in time of war. Its practical and theoretical efficiency must be as high as it is varied. Its casualty rate is also higher than in any other branch of the service. An aeroplane is an instrument of pronounced delicacy, very liable to injury. A flying officer's training is long and expensive.

Hence it is desirable that the Royal Flying Corps should be maintained constantly at war strength. Any reserve of men and machines should be in addition to the estimated required establishment in times of emergency. Assuming that Great Britain has one hundred privately owned aeroplanes up to the standard recently quoted by Mr. Joynson Hicks, and one hundred civilian pilots capable of flying them, the country could not rely with any degree of certainty on the services of ten per centum of those men and machines in time of war. Innumerable circumstances operate them from an emergency force. Again, such are the conditions in this country that no civilian in this country is capable of raising a hand to defend his native heath unless he is one of the few who of their own free will have served in the King's Regular Forces to maintain the honour of England for no material reward at all. Therefore, a civilian pilot has to begin the exhaustive training required at the very beginning. He has not the faintest knowledge of the subject, and in the majority of cases not the faintest sympathy with naval and military needs or habits.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," April 23rd. War Office, Regular Forces:—

Royal Flying Corps, Military Wing.—Second Lieutenant C. G. S. Gould, R.A., to be a flying officer, and to be seconded (April 3rd).

Admiralty appointments, April 23rd:—

Commander—F. R. Scarlett, to the "Hermes," on commissioning, to date May 7th.

Admiralty appointments, April 24th:—

Captain—G. W. Vivian, to the "Pembroke," additional, for the "Hermes," for Naval Air Service, to date April 25th; and to the "Hermes," in command, on commissioning, for Naval Air Service, to date May 7th.

Admiralty appointments, April 25th:—

Lieutenants—Frederick L. M. Boothby and Harold L. Woodcock to the "Actæon," additional, for Naval Airship Section, as Flight Commanders, to date April 15th; Frederick W. Bowhill, Arthur W. Bigsworth, James R. B. Kennedy, Douglas A. Oliver, Robert P. Ross, and Henry D. Vernon to the "Actæon," additional, as flying officers, to be attached to the Naval Flying School, temporary, to date April 17th.

Engineer-Lieutenant Edward F. Briggs to the "Actæon," additional, for Naval Flying School, as Flight Commander, and for machinery and overseeing duties, to date April 15th.

Assistant-Paymaster John H. Lidderdale to the "President," additonal, for the Central Flyng School, and as flying officer in the First Reserve Naval Wing, to date April 17th.

Royal Marines.—Lieutenant Charles E. H. Rathbone to the "Actæon," additional, as flying officer, to be attached to the Naval Flying School, temporary, to date April 17th.

Royal Naval Volunteer Reserve.—Sub-Lieutenant Reginald L. G. Marix and Hugh A. Littleton to the "Actæon," additional, to date April 17th.

Admiralty Appointments, April 28th:—

Staff Surgeon: R. S. Osborne, to the "Hermes," on commissioning, to date May 7th.

H.M.S. Hermes, to which several officers have been appointed this week, is a protected cruiser of 5,600 tons displacement. She is to be a tender to the Royal Flying Corps, Naval Wing. The following facts concerning the Hermes may be of interest. Launched 1898, completed 1900, I.H.P. 10,000, speed 20.9 knots, coal capacity 500 tons.

Several changes in the staff of Squadron No. 2, R.F.C., at Montrose are shortly to take place. Capt. Becke (Sherwood Foresters) is mentioned as probable commander of a fourth or fifth squadron to be formed in the South of England shortly. Capt. Longcroft (Welsh Regiment) is also reported as being likely to obtain similar promotion. Both have reputations as skilful pilots and have been very popular during their stay at Montrose. Lieut. Pepper also leaves shortly for another squadron.

To fill their places here three officers are coming from Farnborough, their names being Capt. Robert Pigot, Lieut. Baron T. James, and Second Lieut. R. Smith-Barry.

Panmure Barracks and the Dysart Aerodrome were inspected on Monday 21st by Brigadier-General Wintour (in charge of administration), Colonel Huskison (commanding R.E., Scottish Command), Major Maloney (commanding Royal Highland Engineers), and Colonel Woodhouse (Deputy Director of the Medical Service). After thorough inspection of the headquarters, the party motored to the aerodrome and inspected the hangars and machines, after which Capt. Longcroft gave two exhibition flights on a "B.E." tiplane The party returned later to barracks for lunch, after which Colonel Huskison went over the buildings again and took extensive notes thereon.

FRANCE.

On April 21st, at Villacoublay, Lieutenant R. A. H. C. Blanmont (7th Colonial Infantry) was killed while flying a Morane-Saulnier monoplane. He had made a short flight, and at 5.10 p.m. started to glide down from about 600 feet When still a couple of hundred feet up he was struck by a gust and was apparently thrown out of his machine, for he struck ground in advance of it. He was killed instantly. Lieutenant de Blanmont was born on April 27th, 1887, and took his pilot-aviator's certificate on April 9th this year. His brevet was only passed officially on the day of his death.

The "Journal Officiel" published on April 22nd an order of the Ministry of War altering the organisation of the aeronautical service. The following is a brief précis of its provisions:—

As was decreed by the law of March 28th, 1912, the aero-

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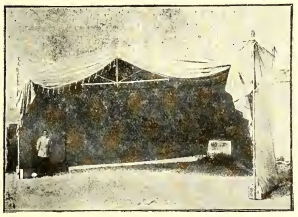
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nautical service consists of a flying personnel, ordinary troops and establishments.

The aeronautical troops include companies (for spherical and dirigible balloons), and sections (for aeroplanes). For home service, the commands and the instructional services in the sections are divided into escadrilles.

The establishments include: schools (for the instruction of pupils), special establishments (for construction and purchase of matériel, certain repairs and experimental work), direction (administration of technical stores), depots and workshops (administration and maintenance of matériel in use and in reserve).

A "port d'attache" comprises dirigible outfits and an aerostation company, a store depot, and workshop. A "centre d'aviation" consists of one or several sections of aviation and a store depot. If the two elements are united, the commandant is an officer of higher rank than is the case under normal conditions, a chef du service aeronautique. There is a common depot.

The sub-division, in three groups, is to be under the command of a colonel or a lieutenant-colonel. The first group (Versailles) includes Paris, the 3rd, 4th, 5th, 9th, 10th, 11th, 20th corps and North Africa: the second group (Reims), 1st, 2nd, and 6th corps; and the third (Lyon), 7th, 8th, 12th, 13th, 14th, 15th, 16th, 17th and 18th corps.

The officers commanding army corps exercise direct authority in matters of general discipline, external service, public order and tactical instruction.

They exercise their authority through the intermediary of the commandants of groups who control internal discipline of their units, matters of personnel and of mobilisation, and by the intermediary of directors for the administration of technical stores.

The governors of fortified places have, under the authority of the general officers commanding army corps. the same powers as these officers in matters concerning the units specially detailed to the defence of their towns.

The following record of the work done by French military dirigibles during the past year may be of interest. The facts are taken from the "Times":—

During the year, the "Dupuy-de-Lôme," which has a capacity of 9,700 cubic metres and is driven by motors developing 244 h.p., spent 100 hours in the air, carrying 321 passengers over a distance of 4,424 kilometres, and consuming 66,689 cubic metres of hydrogen gas. The "Captain Ferber" (6,000 cubic metres, 180 h.p.) travelled for 152 hours. It covered a distance of 5,900 kilometres, carried 610 passengers, and consumed 45,500 cubic metres of hydrogen. The "Fleurus" (6,500 cubic metres, 150 h.p.) went out three times; it was in the air 3 hrs. 41 mins., and carried 24 passengers over 159 kilometres, consuming 19,000 cubic metres of hydrogen. The "Adjudant Réau" (9,000 cubic metres, 250 h.p.), travelling for 105 hrs. 39 mins., covered 3,845 kilometres; it carried 479 passengers, and consumed 81,197 cubic metres of hydrogen. "Le Temps" (2,500 cubic metres, 60 h.p.) travelled for 23 hrs. 26 mins., covering 700 kilometres; it carried 66 passengers, and consumed 9,163 cubic metres of gas. The "Adjudant Vincenot" (10,000 cubic metres, 240 h.p.) was out for 55 hrs. and covered during that time a distance of 2,235 kilometres. It carried 326 passengers, and used up 50,000 cubic metres of hydrogen.

On April 21st, at the Camp de Mailly, Corporal-aviator Foulquier and a mechanic were flying in a Henry Farman biplane (80-h.p. Gnome) when, during a sharp turn, the machine side-slipped into a copse of fir-trees. Both pilot and passenger were seriously injured.

An escadrille of Maurice Farman biplanes (70-h.p. Renault engines), piloted by Captain Saint-Quentin (C.O.), Lieutenants d'Abrantes, Battini, Grezaud, Gignoux, and Quartermaster Quennehen, left Epinal at 6 o'clock on April 23rd and flew in company to the Camp de Chalons, where they arrived at 8.15 p.m., having covered a distance of 118 miles without a stop.—W.

GERMANY.

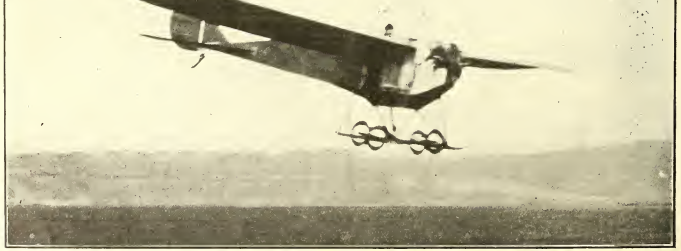
On April 28th an inquiry was held at Freidrichshafn into the circumstances surrounding the landing of the "Z.4" at Lunéville recently. A commission composed of officers of the aviation service examined the officers who were on board the Zeppelin on her historic trip.

The Ministry of War intends to hold a competition to determine the best type of aeroplane hangar. Eleven hangars have already been entered.

Posen has collected within its bounds the sum of 100,000 marks for military aviation. By the Emperor's consent 40,000 marks of this sum is to be devoted to the purchase of two aeroplanes, to be named the "Posen" and the "Bromberg." The remainder will go towards the building of a hangar.

The dirigible "S.L.1," stationed at Biesdorf, is now completely repaired and will shortly make several voyages of some length.

On April 22nd two officers in uniform, Capt. von Dewal and Lieut. Mirbach, flying a Heller biplane (70-h.p. Argus motor), landed at Arracourt about 7.30 a.m. This village is four miles within the French frontier. They were examined by the local civil and military authorities and a report was sent to the Ministry of the Interior. It appears that they left Darmstadt shortly after 5 a.m. with the intention of flying to Metz, and had lost their way in the fog. They stated that they were unaware that they had crossed the frontier. They were allowed to fly back to Germany at five in the evening. Their story may be true, but it certainly seems unwise to fly so near the frontier when

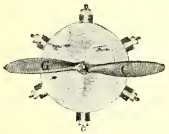


The Vickers monoplane (No. 5), piloted by Mr. Barnwell, at Brooklands on April 23rd.

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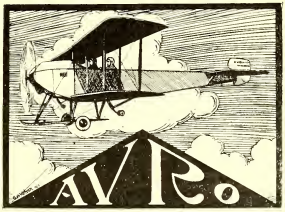
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the political situation between the two countries is in so critical a state. A curious point in connection with this continued series of "accidents" is that, while French officers patrol the frontier in aeroplanes daily, not one of them has so far landed on German soil. The honour and wisdom of the French army has always been peculiarly high.

A German correspondent writes:—"The Germans asked for an estimate to be sent up of the damage done to the fields by their landing, but the farmers refused the offered payment, regarding the incident as one compelled by force majeure. Persons unacquainted with the Franco-German borderlands cannot realise fully the difficulty of recognising the frontier, where both sides are so absolutely similar in formation, population, and patois, having for centuries past been united under one and the same rule. Captain von Dewall is head of the Darmstadt aviation station, and with him three other machines ascended for Metz; one landed in the County Palatine, and the others arrived safely at Metz, where they are quartered in tents on the flying-ground and are doing special practice with the local detachment."

The Zeppelin "Hansa" was used on April 22nd at Kummersdorf in gun practice. Rumour says it was used as a target, but rumour probably lies. It is stated that the airship flew at an average height of 6000 feet, and that bombs were dropped at targets on the ground with satisfactory results.

A steel biplane built by the Parseval Company at Bitterfeld is now undergoing trials at Johannisthal. It is fitted with a 100-h.p. motor.—W.

The military aviation station at Metz turned out in full for military practice one evening last week, when forty machines were brought out of their hangars. Ten were sent off on special messages, and several interesting tests, of which no particulars are furnished, were carried out. At half-past ten the Zeppelin entered into the practice, which ended most successfully.

Major Sieger, of the Metz aviation detachment, carried out a tour of inspection of the Mulhouse and Strassburg flying corps by aeroplane last week, taking 48 hours in all for his visit.

Graudenz, the big German fortress, is to receive a large aerial detachment as well, the grounds for the necessary extension having been placed at the disposal of the War Office by the municipal authorities, for here, as everywhere else, the increase of garrison is regarded as a boon to business. In order to satisfy the demands for garrisons, even only for a company or two, addressed by the townships in the Empire to headquarters, the German Army would be double its present size—and that is hardly inconsiderable.

"L.1," the naval Zeppelin, has changed its headquarters from Berlin-Johannisthal to Hamburg-Fuhlsbuettel, where it arrived at 1.30 p.m., but, owing to the contrary winds, was unable to effect a landing until 5 o'clock. "L.1" will take part in the naval manœuvres with the High Seas Fleet, this being the first time fleet and airship act together.

A new hydro-aeroplane has been accepted by the German Admiralty for Danzig-Putzig, having fulfilled all requirements. It is an Ago biplane with a four-cylinder 100-h.p. Argus motor, and is piloted by von Gorrissen.—B.

ITALY.

Apparently the Italian military trials have been an absolute fiasco. Our correspondent writes from Turin:—"The weather too, is not favourable and the roads have ceased to exist having become muddy canals. Messrs. Pizey and Sippe and Captain Dickson are here, so too M. Coanda. They have taken me out by the afore-mentioned canals to the ploughed-up field where some twenty machines are sitting and waiting for the month and the fiasco to end. Nobody seems to regard the trials as anything but a trip to the public and to the Italian manufacturers, who quite wisely have quietly withdrawn. Extreme fogginess seems to exist in men's minds, and the newspaper-men have given the whole thing up in despair after perpetrating some terrible errors.

"There is nothing at all original that I can see so far among the machines, which consist of a wholesome mixture compounded of bits of Deperdussins, Nieuports, and Farmans fastened together as well as the Italians can do it. There is a tendency to Nieuport style among the Italian manoplanes, several of which look, at any rate, well built, and all can fly. The torpedo type got into those trees which killed Croci (?) some years back, and perched there so comfortably that the pilot got out and climbed down. Then there was Slavorossoff's disaster, and Lieut. Rossi had an axle break on one of the Italian Nieuports, which did not improve his landing.

"I am informed that the Italian lakes will see a round trip for wheeled waterplanes only in September, Stresa and Cernobbio to be centres.

"'P.5' has been doing excellently. Rome to Verona nonstop, and out again for a longish flight the next day. Caproni's luck is quite out. 'Bielo' has smashed up his other Turin trial machine. With a lot of good pilots there it is marvellous how little has been done."

On April 19th, at Mirafiori, one of Caproni's own type of monoplanes, with Slavorossoff as pilot and Francesco Gallo as passenger, came down rather suddenly and caught fire. The passenger being strapped in was burnt to death, but Slavorossoff, though his leg was broken, escaped and is fairly safe. The official pronouncement of the air battalion says that the petrol-tank broke on the monoplane striking the ground, but some tale of a cylinder blowing off is about. Gallo was one of Caproni's pupils.—T. S. H.

SPAIN.

The aerial fleet of Spain is increasing daily. On April 20th, at Buc, M. Maurice Farman, M. Fourny, and M. Bernard, each flying a Maurice Farman biplane with a passenger, put these three machines through their tests for the Spanish army.

On the following day, Fourny and Bernard put two more Farman biplanes through the same tests. Captain Herrara, of the Spanish army, accepted delivery for Spain.—W.

FOREIGN NOTES.

France.

The season for serious attempts on annual prizes would appear to have set in, for several attempts have been made on the Coupe Pommery and one on the Michelin Cup for 1913. M. Duval, the one-time Caudron pilot, covered between Etampes and Gidy a distance of 536 miles on April 24. He was flying a Deperdussin monoplane (50-h.p. Clerget). Starting at 8 a.m., he flew for close on nine hours. Etampes to Gidy and back via Orleans, is about 65 miles, and his average time for the circuit was about 1 hour 2 mins.

M. Victor Tatin, one of the leading aeronautical scientists in France, died in Paris on April 10th. Born in Paris in 1843, he showed at an early age a deep interest in aeronautical matters, starting as so many have done in a study of the flight of birds. He drew up designs for aeroplanes, dirigible balloons, and hydroplanes. About the same time he invented a registering barometer. He also produced a new type of internal combustion motor, and with Professor Richet he made various model aeroplanes. Aided by M. Deutsch de la Meurthe, he had much to do with the construction of an early dirigible, the "Ville de Paris," in the beginning of the century. He is better remembered by aviators for his share in the design of the Paulhan-Tatin monoplane which, by the way, was first flown by the unfortunate Gaudart, who was killed at Monaco about a fortnight ago.

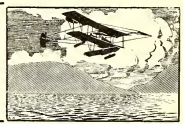
M. Seguin has during the past week or two made several attempts to start on his flight from Marseilles to Algiers. Each time something has happened to prevent his starting. On the 18th he was about to leave Marseilles when the rain started to fall and he was again baulked. His attempt has had to be postponed now owing to the necessity of the torpedo-boats which were to patrol his course taking part in combined manœuvres.—W.

Germany.

Accidents and no end, and peculiarly enough all on one and the same day—April 24th. Whilst Lieutenant Germersheim, accompanied by Second Lieutenant Schirnerer, was testing an aeroplane at Munich-Schleissheim they collided with a tree in landing. Both men were severely injured, the pilot suffering a fracture of the skull and concussion of the brain, whilst Lieutenant Schirnerer's injuries consist in concussion and more

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external wounds. Germersheim's condition is said to be very dangerous.

At the Strassburg military ground a soldier was mending a refractory propeller when it suddenly commenced working and shattered both the unfortunate man's arms.

Johannisthal, ever unlucky, once again headed the list, for a death and two accidents is its sum total for this black Thursday. About 7 a.m. Princess Schakowskoy mounted for a practice spin on a 35-h.p. Wright, with Abramowitch, the famous Wright pilot and her former tutor, as her passenger. Coming into the aerial current produced by a landing Rumpler, the machine began to sway unpleasantly, and in attempting to right it the Princess must have put too much sudden pressure on the altitude rudder. The aeroplane pitched forward sharply from about ten yards' elevation and crashed to earth. The lady escaped with minor injuries, thanks to her helmet, else she would have broken her skull, but Abramowitch, who was hardly convalescent as it was, was knocked about very badly and was still unconscious at night.

The wreckage was not yet cleared away when a fatal accident occurred to Dunetz, a Russian pilot engaged by the L. G. V., who was flying a 70-h.p. L. G. V. monoplane of the Nieuport type. Attempting to land with running motor from a height of 250 yards, the apparatus apparently gave way beneath the strain and crashed down, digging itself deep into the ground. The man was killed instantaneously and the machine so badly knocked about that the real cause of the mishap will be difficult to apprehend with certainty. Dunetz took out his brevet in 1910 in France on a Blériot, and then lived in Italy as assistant to Caproni, whose monoplanes he flew. In Germany he acted originally as pilot for the Harlan make and had only shortly changed over to the Luftverkehrsgesellschaft.

On Thursday night Abramowitch passed away at 11 o'clock, having lain unconscious since the early morning. In him German aviation, and the Wright Company in especial, lose one of their best pilots, as the young Russian, who was barely 22 years of age, had gained international renown by his flight to St. Petersburg, etc., and his participation in the Russian War Office flights, which resulted in a large number of aeroplanes being ordered in Germany for the Russian Army. Abramowitch was a pupil of Captain Engelhard, who also lost his life at Johannisthal.

Director Loutzkoy, who designed and built the 500-h.p. racing motor-boat "Zariska," owned by the Russian Emperor, has just completed a new six-cylinder motor of 150-h.p., which is being tested in a Jeannin military steel aeroplane at Berlin. It may be remembered that the 200-h.p. aeroplane built by Rumplers and exhibited at the last Berlin Aero Show was constructed by Director Loutzkoy

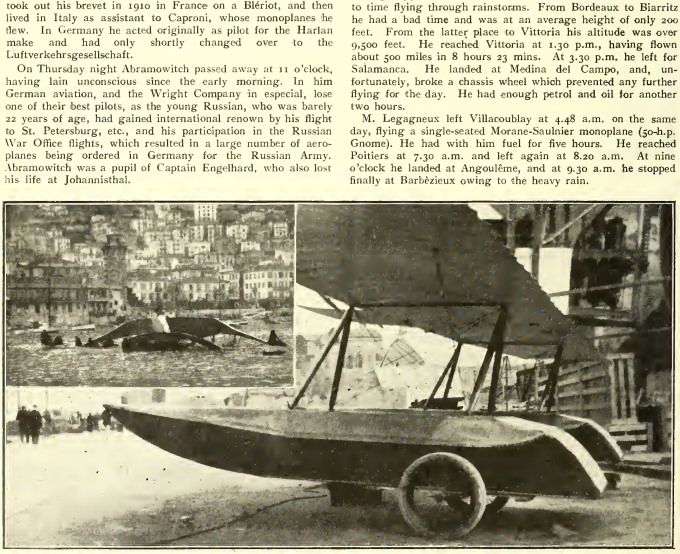
May 25th to June 1st will witness the first national flying week this year at Berlin-Johannisthal, the prizes attaining a total of 56,000 marks, including the 25,000 marks given by the War Office and 10,000 marks from the National Aero Fund. The programme comprises: Shortest start contest, shortest run-out, duration prize, flying prize for aviatresses, and a race of about 20 kilometres.—B.

A Splendid Flight.

During the past fortnight there have been many flights of distinction. Daucourt, Audemars, Hamel and Legagneux have each travelled across country distances which two years ago would be regarded as nothing short of marvellous. On April 24th M. Eugéne Gilbert eclipsed them all by a non-stop flight from Paris to Vittoria, in Spain, without a stop. Both he and Legagneux had the intention of flying as far as possible in the direction of Madrid in the space of one day in competition for the Coupe Pommery, at present held by Daucourt.

On a Morane-Saulnier two-seated monoplane (60-h.p. Le Rhone motor), loaded with oil and petrol for a continuous flight of 12 hours, Gilbert left Villacoublay at 5.7 a.m. He averaged 74 miles an hour from Paris to Bordeaux from time to time flying through rainstorms. From Bordeaux to Biarritz he had a bad time and was at an average height of only 200 feet. From the latter place to Vittoria his altitude was over 9,500 feet. He reached Vittoria at 1.30 p.m., having flown about 500 miles in 8 hours 23 mins. At 3.30 p.m. he left for Salamanca. He landed at Medina del Campo, and, unfortunately, broke a chassis wheel which prevented any further flying for the day. He had enough petrol and oil for another two hours.

M. Legagneux left Villacoublay at 4.48 a.m. on the same day, flying a single-seated Morane-Saulnier monoplane (50-h.p. Gnome). He had with him fuel for five hours. He reached Poitiers at 7.30 a.m. and left again at 8.20 a.m. At nine o'clock he landed at Angoulême, and at 9.30 a.m. he stopped finally at Barbézieux owing to the heavy rain.



The "concertina" floats of the Henry Farman at Monaco. Inset is the machine after its first mishap.

Questions in the House.

ORAL ANSWERS, APRIL 22ND, 1913.

National Defence (British Aeroplanes).

Captain MURRAY: I desire to ask the Secretary of State for War a question, of which I have given him private notice—namely, Whether his attention has been called to a public statement made by Lord Montagu of Beaulieu that the War Office is in possession of only forty-three aeroplanes, instead of 101, as stated by him; and whether this statement is accurate?

Colonel SEELY: Yes, sir, my attention was at once called to the statement. Lord Montagu has written me the following letter:—

"1st April, 1913.

"Dear Seely,—I was very glad to receive your invitation to come to the War Office to-day, and to inspect there the documents supplied by your official advisers, and to meet the General Officer who is charged with the administration of the Royal Flying Corps.

"I am now fully convinced that the number of aeroplanes you have publicly stated represents those really available. I am glad to know that the number is, at the present date, in excess of the 101 you stated on March 19th were then in the possession of the War Office.

"I quite appreciate the necessity for secrecy in these matters, and understand how misapprehensions may have arisen, and regret that I gave publicity to erroneous figures.

"I am glad the matter has now been cleared up as regards numbers, but you will, I know, allow me to continue to urge upon the Government and upon the public in general the absolute necessity for better provision for military and naval aviation, especially in matters pertaining to housing and transport.

"I shall be glad if you could read this letter to the House of Commons at the first possible opportunity.—Yours sincerely,

"(Signed) MONTAGU OF BEAULIEU."

I trust, sir, that this complete statement may put an end to reflections on the good faith not merely of myself, but of the distinguished officers and public officials on whom, as everyone knows, I must largely rely in giving figures to this House. At the same time, the House will permit me to acknowledge most warmly the characteristically prompt, frank, and straightforward manner in which Lord Montagu has dealt with this question.

ORAL ANSWERS, APRIL 23RD, 1913.

Aircraft.

3. Mr. HUNT asked the First Lord of the Admiralty what amount of money is provided in the present Estimates for building large dirigibles equal in power and speed to the German "Zeppelin" type; and what amount of money is provided for the necessary sheds for housing them.

Mr. CHURCHILL: No money is provided in the present Estimates for building aircraft of the type referred to. Provision has been made in the Estimates for the building of sheds, which is the essential preliminary to the acquisition of such vessels, but it would not be in the public interest to name the amount.

Mr. HUNT: Is not the right hon. gentleman aware that Germany has already got twelve big airships and is providing £900,000 for building more during the next twelve months?

Mr. CHURCHILL: The Admiralty is not unprovided with information on that subject.

Mr. JOYNSON-HICKS: Does the right hon. gentleman know that sheds only take a tithe of the time to build that airships take?

Mr. CHURCHILL: I should think that that observation is as inaccurate as several others I have heard the hon. gentleman make on the subject.

Mr. JOYNSON-HICKS: May I ask the right hon. gentleman whether the statement is not correct? He knows it is correct.

Mr. CHURCHILL: I shall be very glad to have a proposal for the construction of sheds in a tenth part of the time required to construct airships.

Volunteer Flying Corps.

18. Mr. JOYNSON-HICKS asked the Secretary of State for War whether his attention has been called to the proposal to establish a volunteer flying corps at Liverpool; and whether he will be prepared to recognise and encourage the new organisation as soon as private generosity has provided the necessary equipment.

Colonel SEELY: A notification of the proposal has been received and is now under consideration.

Royal Flying Corps.

19 and 22. Mr. JOYNSON-HICKS asked the Secretary of State for War (1) how many effective aeroplanes ready to start for war at an hour's notice are now in the possession of the Royal Flying Corps; and how many have been delivered since the introduction of the Army Estimates for the current year; and (2) how many effective aeroplanes in the possession of squadrons Nos. 2, 3, and 4 of the Royal Flying Corps, respectively, have been destroyed or seriously damaged by accident since the 1st of April; and what is the number of new machines of modern type taken over by those squadrons since the same date.

Colonel SEELY: It is not considered to be in the interests of the public service to publish the required information.

Mr. JOYNSON-HICKS: Seeing that the right hon. gentleman has allowed a member of the other House of Parliament to inquire into this matter, will he permit a couple of members on this side to go and see these machines?

Colonel SEELY: I do not know whether there is any use in my giving further replies to the hon. gentleman. I have repeatedly made statements, and he does not believe any of them. If he asks whether I can give the information which I gave to Lord Montagu to a couple of representative gentlemen on the other side I should only be too happy to do so.

Mr. JOYNSON-HICKS: Will the right hon. gentleman say whether I ever suggested that I did not believe him personally, or whether I have not assumed that he was acting on information wrongly supplied by his officers?

Colonel SEELY: I think that that is even worse, as it implies that distinguished officers in the public service in giving me information deliberately concealed the truth from me. I resent that most strongly on their behalf.

20. Mr. JOYNSON-HICKS asked what is the condition of the monoplanes which the Royal Flying Corps were forbidden to fly pending the Report of his Committee; whether any of those have yet been flown since the Committee reported; and whether any of the officers of the Royal Flying Corps are allowed to fly Nieuport monoplanes or if they are still considered unsafe.

Colonel SEELY: I have nothing to add to the information which I gave the hon. member in reply to questions put by him on this subject on March 13th.

Mr. JOYNSON-HICKS: Have these machines been flown since that date? It is now five weeks after.

Colonel SEELY: I have said that I have nothing to add to the reply which I gave on March 13th.

21. Mr. JOYNSON-HICKS asked whether the new Government-built biplane alleged to have flown at a speed of 91 miles per hour was recently practically destroyed in an accident which was due to the natural instability of the machine and not an engine defect; and whether in that accident Second-Lieutenant Geoffrey de Havilland was seriously injured, and is still in hospital.

Colonel SEELY: The accident was not due to any inherent instability. I regret to say that Second-Lieutenant de Havilland, who has rendered great service in flying different types of machines, was hurt. He is, however, expected to be out of hospital in a few days.

ORAL ANSWERS, APRIL 24TH, 1913.

National Defence Airships.

32. Mr. HUNT asked the Prime Minister whether he is aware that people all over the country are becoming seriously alarmed at our defencelessness against attack from the air; and can he say what steps the Government proposes to take to make up for their past neglect to provide us with the means of aerial attack and defence.

The PRIME MINISTER: As I stated on the 16th instant, this matter is receiving the continued attention of His Majesty's Government. As regards the latter part of the question, I must refer the hon. member to what my right hon. friend the Secretary of State for War has said on the subject, to which I have nothing to add.

Mr. Hunt: In view of the fact that we have not any big airships, and are not going to have any, are we to understand that we are to be left defenceless against the big airships of the enemy, which admittedly can be used at night to drop high explosives on our docks, big towns, and other places?

The Prime Minister: The hon. gentleman is not to understand that at all. The whole matter is receiving the most careful consideration under the best expert advice in the country.

Mr. Hunt rose——

Mr. Speaker: The hon. gentleman had better continue his argument in Committee of Supply.

Written Answers, April 24th, 1913.

Royal Flying Corps.

Mr. Pike Pease asked the Secretary of State for War the reason why the Clement-Bayard airship, which travelled from Paris to London in record time, was not further used by the War Office.

Colonel Seely: I have stated previously that this airship was dismantled because it was unserviceable. Since the question has been raised again, I may say that it was found, in the first place, that the airship was not new when bought, having been used in the autumn manœuvres in France on trial for the French Government; and, in the second place, that the envelope leaked very badly, to the extent of 12,000 cubic feet of gas per day, so that it would have cost about £135 a week to keep it inflated. It appeared also that the speed of the airship was not over 33 miles per hour, and that it was slow on control compared with our standards.

The Royal Aero Club.

At the committee meeting on the 22nd inst. Colonel H. C. L. Holdon, C.B., F.R.S., moved the following resolution:—

"The committee of the Royal Aero Club desire to express to Lady Rose their deep regret at the death of Sir Charles Day Rose, Bart., and their heartfelt sympathy with her in her bereavement.

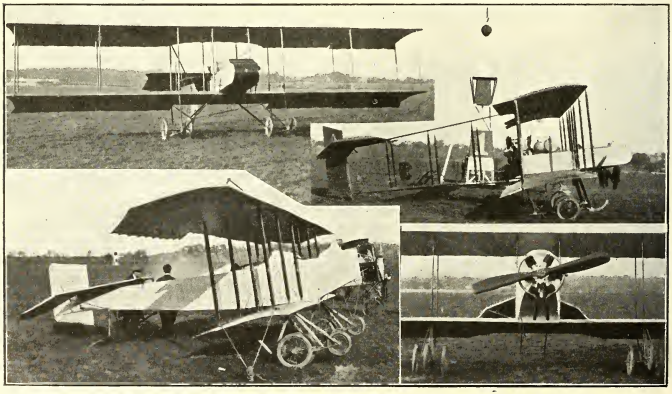
"The committee gratefully recognise the valuable services which the late Sir Charles Rose had rendered to the Royal Aero Club, and through it to the progress of aviation, and the committee and every member of the Royal Aero Club will mourn the loss of their chairman, whose manly presence, combined with a clearness of thought and expression, firmness of purpose, and a rare charm of manner, permanently endeared him to the hearts of all those who had the good fortune to be brought into contact with him."

Mr. R. W. Wallace seconded the resolution, which was carried by the members of the committee standing.

The following aviators' certificates have been granted:—No. 453, March 31st, 1913, Engine-room Artificer Herbert Hackney, R.N. (Bristol biplane, Royal Naval Aviation School, Eastchurch); 454, March 31st, 1913, Capt. G. W. Vivian, R.N. (Short biplane, Central Flying School, Upavon); 455, April 11th, 1913, Leading Seaman G. R. Ashton (Short biplane, Central Flying School, Upavon); 456, April 11th, 1913, Sergt. H. C. Wright, R.F.C. (Short biplane, Central Flying School, Upavon); 457, April 12th, 1913, Lieut. T. W. Mulcahy-Morgan, Royal Irish Fusiliers (Bristol biplane, Bristol School, Brooklands); 458, April 12th, 1913, J. H. A. Landon (Bristol biplane, Bristol School, Brooklands); 459, April 17th, 1913, J. H. G. Torr (Caudron biplane, Ewen School, Hendon); 460, April 22nd, 1913, Sub-Lieut. R. E. C. Peirse, R.N.V.R. (Bristol biplane, Bristol School, Brooklands); 461, April 22nd, 1913, 2nd Lieut. V. Waterfall, East Yorks. Regt. (Vickers biplane, Vickers School, Brooklands); 462, April 22nd, 1913, R. N. Wight (Vickers biplane, Vickers School, Brooklands).

Air Signals at Dover.

It will be remembered that recently when Mr. Hamel started from Dover news of his flight reached the Home Office twenty minutes after he had started, which shows that the machinery of the Air Laws is in excellent working order. It is, therefore, rather a pity that the War Office is not fulfilling its part of the contract, for one gathers on very reliable authority that no provision has yet been made at Dover for sending up, as specified in the Act, signals intimating that the pilot must land, nor are there any of the new high angle guns yet mounted. The only possible weapon would be one of the very large guns which breaks about half the windows in Dover every time it is fired.



Two Grahame-White biplanes recently bought by the Royal Flying Corps. The top photographs illustrate a propeller biplane fitted with a 70-h.p. Gnome. The lower machine is the hydro-aeroplane exhibited at Olympia converted for land use (60-h.p. Anzani).

The Death of Lieutenant Harrison.

At 6.30 a.m. on April 28th, Lieutenant Harrison, R.F.C., was flying the Cody biplane which won the Military Aeroplane Competition, at South Farnborough. He started to descend at a steep angle, and, according to reports, the elevators collapsed when still at a height of 400 feet. The machine dived to the ground and the pilot was instantly killed.

In January he was officially detailed to Mr. Cody for instruction in piloting the Cody biplane purchased for his Majesty's Service, and recently he has made several flights of some length on that machine.

Lieutenant Lancelot Charles Rogers-Harrison, Royal Warwickshire Regiment, was born at Salem, India, September 31st, 1889, and took his pilot-aviator's certificate on a Bristol biplane on Salisbury Plain on April 16th, 1912. He received his first commission as 2nd lieutenant, Royal Warwickshire Regiment, September 18th, 1909, lieutenant September 16th, 1912.

Lieut. Longmore's Wedding.

The following announcement appeared in the "Times" newspaper on April 25th:—

LONGMORE: MAITLAND.—On April 23rd, at St. Peter's, Eaton Square, by the Revd. William Neville, Rector of Knoyle, Salisbury, cousin of the bride, assisted by the Revd. Prebendary Storrs, Arthur Murray Longmore, only son of Mrs. Murray Longmore, of the Manor House, Upavon, Wilts, to Marjorie, only daughter of W. J. Maitland, of 18, Lennox Gardens, S.W., and Witley Manor, Witley, Surrey.

Lieutenant A. M. Longmore, R.N., R.F.C., was one of the first four officers in the Navy appointed for flying duties. He gained his early experience on a Short biplane at Eastchurch in 1911. Recently he has been an instructor at the Central Flying School. On April 16th he was appointed to the "Actæon" as Squadron Commander for the command of an important base in the North.

The good wishes of all will accompany Lieut. Longmore and his wife in their new sphere.

Mr. Duigan in Australia.

Mr. J. R. Duigan, who returned to Australia last summer, has since built a tractor biplane of his own design. The machine was completed in February, and the following is Mr. Duigan's account of his first trials: "The completed machine was one of the prettiest I have ever seen. The highest point was only 7 ft. 6 in. off the ground and the complete 'bus was under 550 lbs., span 31 ft., chord 4 ft. 6 in., length about 25 ft., large tail and elevators. All steel tube frames brazed. The whole planes were warped right from the fuselage.

"We took the completed machine out to a place about seven miles from Melbourne, a nice piece of ground, level and pretty smooth, and a decent size. On Monday morning, February 17th, we had her all ready for trials. First tried several straights, she rose very easily and flew dead steady, the balance being perfect. Also the landing gear was very satisfactory. Next tried a circuit, the wind at the time being very slight, about two or three miles an hour on the ground. Started off, engine throttled a bit and shot into the air like a Gnome-Blériot. Reached 100 feet in a few seconds by barometer. Then brought her down turning to the left very carefully with hardly any banking at all until I was just about head on to the wind.

"Then she suddenly stood quite still over the ground evidently having run into a strong current of wind. She practically lost all her momentum in this, and I had just turned her nose down meaning to land when a strong gust caught the right wing, or maybe it died away under the left, anyway, result was she banked over and did a side slip and nose dive from 40 to 50 feet, landing right on the front skid and propeller. She then turned over on her back. I got the father of a bump on the ribs on the right side against the padding of the decking, strained a finger and wrist a bit and hurt my knee, though not much. Also the back of my neck is very stiff from my head being jerked forward. I got off very luckily, for broke no ribs although my side was bruised badly.

"The machine stood the bump wonderfully owing, I think, to its light strong construction. The fuselage broke behind the pilot's seat, the elevators, etc., being undamaged. The engine was thrown out and broke the propeller and crankshaft, only the very nose of the crank-case being damaged. Petrol tank got a bit dirtied, but did not leak. Radiator also quite uninjured. The main fuselage carrying engine, passenger and pilot quite uninjured except for front skid and engine bearers. The fuselage members right on the nose were not even split. The wings got bust up a bit, four of the eight spars are practically uninjured and two or three others can easily be fixed up. The wheel gear never came into action, so never got hurt.

"It was rotten luck getting upended right at the start like that, for she was flying beautifully and had ample power. I really think she would fly 200 revs. less than all out. She was very portable, too, as we took the whole machine, a large propeller case holding four propellers, a tent and poles capable of holding the machine, a tin cabin trunk, oil and petrol and a couple of cases of tools all in *one* ordinary furniture van.

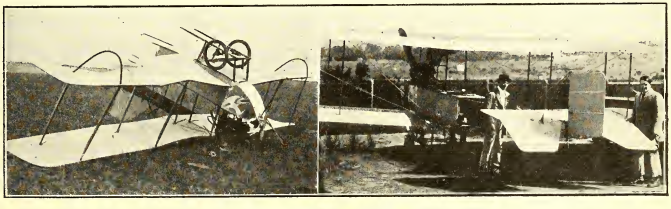
"The smash was hard luck on my brother, R. C. D., for he was greatly looking forward to some flying and was going to try for his certificate soon. As we have a spare crankshaft I think we can fix the engine up here. The fuselage is easily repaired, very little being broken, while the wings are not a very big lot, so he may yet have a chance.

The air is terribly tricky here for it is often dead calm on the ground and blowing hard up 40 or 50 feet, and that is a very dangerous condition of things. The wind also is generally blowing very strongly. In fact it is a terribly windy spot.

"There is practically nothing doing here in the flying line now, and I am afraid the country is not very suitable for it owing to the continuous strong winds."

Any British Entries?

An exhibition of hydro-aeroplanes will be opened very shortly at Danzig, about seventeen types, foreign and German being represented among the exhibits.—B.



Mr. Duigan's biplane before and after the smash.

Exhibitions at Hendon.

On Thursday afternoon the flying at Hendon was worth a long journey to see. A 35-h.p. Deperdussin showed to very great effect what it could do under the guidance of men who knew how to handle the machine. Mr. Spratt first went up to 800 feet, without any particular effort and was fairly well pleased. Mr. Whitehouse then took the machine out and made a flight which is probably the finest on his ever-improving record. Flying for thirty-five minutes he reached a height of 3,200 feet, being completely lost to view on several occasions, by a curious haze which hung over the east. Descending in a steep and finely managed glide, he received two hair-raising buffets at a height of perhaps 200 feet, but showed his contempt for that sort of thing by making three circuits of the ground at a low level before landing, when he was loudly acclaimed by the general public, who are beginning to know a good performance when they see it. Later on, Mr. Spratt again took the machine out and rose in ten minutes to 2,000 feet, and in ten more to well over 3,000, the difference in the heights attained by these two pilots being due, probably, to the difference in their weights.

M. Verrier was up several times with and without passengers, each of his banks and switchbacks being a little more appalling than the last. Mr. Slack took out a 50-h.p. Blériot and gave two graceful exhibitions, while Mr. Turner on the 60 h.p. Caudron and M. Baumann on the 35-h.p. made many interesting flights. Mr. Manton also took up the Grahame-White biplane.

M. Collardeau, whose accidents appear to affect neither his body nor his soul, was up in a 110-h.p. Canton-Unné Bréguet and amused himself by nosing among the covers whence Midland trains emerge; whenever he put up an express he would wheel about and pursue it furiously. This pastime may be amusing, and the sight of a forced landing on the top of an express train might be picturesque, but it is doubtful if these advantages are worth the risks entailed.

On Saturday the wind was too strong and gusty for any machine to venture aloft with any certainty of landing safely. Nevertheless, Mr. Hamel, with Miss Trehawke-Davies as passenger, set out in the 70-h.p. Blériot. They started from the far side of the aerodrome and flew toward the sheds, against the wind, rising almost vertically for the first 50 feet. Coming across the aerodrome at a rate of about 12 m.p.h., they arrived over the enclosure at a height of perhaps 70 ft., where a gust, stronger than usual, brought the machine almost to a standstill. Progressing slowly towards the sheds, they became involved in the downward curl of the wave caused by the wind meeting the back of these sheds, and this caused them to drop quite 30 feet; whereupon Mr. Hamel cut off, as he says, to gain the maximum quickness of control over his machine, and dived safely into the nearest field; a feat which called for a degree of skill which amounts to genius.

Later in the afternoon Mr. Hamel took out a 50-h.p. Blériot to his former starting point, but after the wind had attempted twice to turn the machine over on the ground, and had succeeded once in lifting it twelve clear inches into the air, Mr. Hamel decided wisely to walk home.

Mr. Brock brought out his 35-h.p. Deperdussin while the wind was at its worst, and was taxying down the "parade" when Lieutenant Porte stopped him, to the general relief.

On Sunday the weather had not improved. Mr. Hamel made an attempt to fly to Brooklands alone on the 70-h.p. Blériot. He repeated his performance of Saturday, landing just outside the aerodrome. None else flew during the day.

Mr. Hewitt at Rhyl.

Mr. Vivian Hewitt writes:—"The 'bus is a great success. I was out last Tuesday for an hour in the afternoon and she behaved splendidly. If anything, she seems a little faster, but this is no doubt due to the streamline body as you predicted. As regards flying, she is all that could be desired and lifts quite easily. She climbs splendidly and seems quite unaffected by the extra weight. As regards strength, there is not the least doubt that she is now more than twice as strong as she was. I am told that she looks beautiful in the air with the red paint and the aluminium, and when the sun catches it she looks as if she was on fire. She is totally different to fly, as when a gust strikes the machine she does not appear to stagger anything like she did before. It may only be my imagination, but the feeling of strength is quite different from anything I have felt before. I was up again on Wednesday for an hour doing spirals and also created some excitement by landing on the shore.

"There is an old man in Rhyl who comes to me after every flight with a hen's egg and says, 'One of my little hens has presented me with an egg, will you kindly accept it, Mr. Hewit?'"

This little incident shows that some people are grateful for free exhibitions of flying. Others might follow suit, and then, at any rate, the pilot would be sure of having enough to eat, even if he made no profit.

Mr. Pickles in the Midlands.

On Sunday, April 20th, Mr. Pickles, who had been housing his machine in one of the Midland Aero Club hangars at Wolverhampton, and making some minor adjustments, fitting an oil shield, etc., made a trial flight, and as everything seemed right he decided to fly direct to Newcastle-under-Lyme. Leaving the ground at Wolverhampton at 11.45 a.m., he landed at Newcastle at 12.24, thereby accomplishing the 35 miles in 39 minutes, against the wind all the time. It is interesting to note that he had neither compass nor map, nor had he been over the course before, and the only marks to guide him to the ground were a golf pavilion and a white sheet.

On Tuesday (22nd), the King was to visit the Potteries, arriving from Crewe by motor. Mr. Pickles looked up his route and went to meet him, finding him passing through a village about four miles out. The aeroplane then became part of the Royal procession, only it had to keep on circling round in order to keep back. When he saw a really decent field he would swoop down to about 30 feet, rush along past the Royal car and jump the trees at the farther end.

In the afternoon he made seven flights before a good crowd of people and several cinematograph operators. One flight of 3,500 feet was particularly fine, as he landed from that height into a particularly small ground with his engine stopped, coming down with a hair-raising corkscrew spiral dive.

In the evening he made two flights, one at dusk and one after dark. The ground was lit up with paraffin flares and petrol bonfires. It was a weird flight, because as soon as he got up one lost sight of him in the dark, and only saw him when he swooped down on top of a petrol flare.

On Wednesday, 23rd, he made six flights, one at a height of 5,000 ft., from which height he again came down with his engine stopped. He took up two passengers, one his mechanic and the other a reporter from Birmingham.

On Thursday he made three flights during the afternoon and was just starting the evening flying when rain put an end to the proceedings.

Mr. W. R. Ding writes:—"I may say that if Pickles was flying at Hendon he would create quite a stir. His flying reminds one of Hamel, and he seems to have got quite at home at it in a very short time. As to the machine itself, I think it is the most amazing 'bus I have seen as yet. Its flying speed is not great—about the same as the 50-h.p. Gnome Blériot—but it climbs very fast, even with a passenger, and lands about as slow as any machine in existence. I have seen Pickles practically stop before touching the ground and land without the sign of a pancake, even in a calm. Such a 'bus as this is the ideal for exhibition work, as it makes quite small fields into safe landing grounds.

"The 60-h.p. Anzani has given no trouble whatever up till now, and needs no more attention than an ordinary reliable car engine. Pickles has been running it on Pratt's Perfection (petrol and lubricating it with any old oil he could pick up in the neighbourhood suitable for cars. He finds that carbonisation is practically extinct when using any decent mineral oil, and except from a cleanliness point of view he prefers it to castor oil.

"This exhibition work is really a sort of charity organisation as about 85 per cent. of the crowd invariably view the flying from outside! However, it is probably doing no end of good to the progress of aviation, and one gets plenty of sport out of it and can generally manage to pay expenses."

Mr. Gates' Retirement.

All who know Hendon and the work that has been done there during the past two years will learn with genuine regret that Mr. Richard Gates has resigned his position as manager of the London Aerodrome, as it is his intention to devote himself to certain business concerns of his own in the City. Happily, Mr. Gates remains a director of the Grahame-White Aviation Co., Ltd., so that the peculiarly intimate knowledge he has acquired of men and matters concerned with aviation will not be altogether lost to the Hendon community.

Certainly no one man has done more to popularise aviation in England than Richard Gates, and it is doubtful whether anyone has done as much. When he took hold of the London Aerodrome it was without form and void—merely an expanse of grass with a few sheds in it. To-day it is probably the best arranged and best managed aerodrome in the world, and the fact that throughout last summer and far into the winter it was reckoned a bad day if there were not 10,000 people present on a fine Saturday or Sunday shows how the excellent management appealed to the public of London.

In evolving order out of chaos, Mr. Gates had to war with man and nature at the same time. A peculiarly untractable clay soil had to be drained and made reasonably fit for spectators to stand on and for aeroplanes to roll on. A number of wild untamed aviators and their even more lawless mechanics had to be convinced that a more or less ordered existence possesses some advantages. Mr. Gates conquered by sheer will power and strength of character.

His methods were always original. One instance is really too good to be forgotten. Those who know the inside of aviation also know the pleasant habit that exists at most aerodromes of borrowing tools and so forth from those better equipped than the borrower. The Grahame-White workshops being particularly well stocked offered a tempting bait. Consequently a good deal of borrowing was done by other people who rented sheds. In the instance in question a pair of scissors was borrowed. Three weeks afterwards a beautifully business-like invoice arrived, "To hire of one pair of scissors, three weeks, 1s. 6d." The recipient promptly rushed to Mr. Gates' office, flung down the invoice, and said he could buy a better pair of scissors for a shilling. Mr. Gates agreed with him affably and suggested that it might have been a better investment than hiring them for eighteenpence. Then, as the other man remained speechless with astonishment, he added, "Of course if you like to return the scissors you can have a credit note for the money." The same idea was worked on various other borrowers, and the practice very soon stopped when it was found that borrowing also meant returning.

Like all strong men, Mr. Gates had people "up against" him at times, but I find that those of us who have started by having a row with him—I was one of them myself—have held the highest opinion of him afterwards. Also, those who have had business transactions with him, though they find him one of the keenest buyers and sellers, will acknowledge that when the matter is arranged they are absolutely sure of a square deal.

But Mr. Gates' activities have not been confined to commercialism, for he is recognised as a pilot of high ability. His "rag-time" flying on the G.W. 50-h.p. biplane was one of the recognised attractions at Hendon last summer, and in the night-flying exhibitions Mr. Gates was always the first pilot to go out, showing that he did not ask his employees to do anything he was afraid to do himself. His undoubted pluck and skill went far to solidify the hold his fair and just dealings had given him on the regard of the tenants and employees at Hendon, and when he had his serious accident in the last night-flying performance the genuine affection felt for him was shown by the anxiety everyone displayed for his welfare.

It may not be generally known that Mr. Gates was severely injured by a shell in the Boer War, and won for himself by his good service a commission in the Army.

Altogether, Richard Gates is at the same time one of the most versatile, one of the straightest, and one of the kindest-hearted men connected with aviation, and his successor at Hendon will have no easy task filling his place. However the aviation microbe is not easily eradicated and Mr. Gates is not likely to lose interest in flying, so we shall certainly see a great deal of him and his charming wife, whose interest in his work has been a great help to him, at Hendon in the future.

At the same time, on Mr. Gates' behalf I wish to bespeak for his successor, whoever he may be, the loyal co-operation of all those who have helped to make the London Aerodrome the influential public institution it is to-day.—C. G. G.

Another Record Flight.

On April 27th, M. Guillaux, who flew so well on the tiny 45-h.p. Caudron monoplane in the Aerial Derby for the "Daily Mail" Gold Cup won by Mr. Sopwith, competing for the Pommery Cup, left Biarritz at 4.42 a.m., and reached Kollum, in Holland, at 7 p.m., after a flight that he estimates at about 1,500 kilometres (935 miles). The actual distance between Biarritz and Kollum is about 700 miles. Three stops were made at Bordeaux, Paris, and Ath in Belgium, the last stop lasting two hours. He flew a Clement-Bayard monoplane.

The Aeronautical Correspondent of the "Morning Post" perpetrated some rather amusing "howlers" in his comments, for he says:—

"It would appear that Guillaux had made a flight of about 937½ miles across country from point to point without alighting. But that would represent such a vast advance on his world's record, accomplished only last week, when he flew from Paris over the Pyrenees, a distance of 530 miles without alighting, that the matter of this seeming fresh world's record can only be regarded as doubtful until the performance is officially confirmed. It is not that the aviator himself could not make such a journey provided the weather were favourable. The part of the performance which it is difficult to credit is that an aeroplane could carry the necessary load of fuel and lubricating oil for a flight of such duration. Up to the other day the world's record for duration of flight round and round an aerodrome stood at 600 miles, which, however, took the aviator over thirteen hours to fly."

Firstly, it was M. Gilbert who flew over the Pyrenees. Secondly, he had first a stop at Biarritz (512 miles). Thirdly, M. Fourny's 600 and odd miles was flown round and round a circular course in 13 hrs. 17 mins. on a Maurice Farman biplane which did less than 50 m.p.h. M. Guillaux's flight was on a monoplane which normally does about 70 miles an hour, and on a straight course, where quite a mild wind would bring the speed over 90 m.p.h. When M. Gilbert flew to Biarritz he had a 40 m.p.h. wind behind him to Angoulême, and thereafter a head wind against him, yet his average speed was well over 70 m.p.h., and he then carried petrol and oil for 12 hours.

Junior Engineers and Aeroplanes.

On April 3rd, Mr. A. R. Low, M.A., A.F.Ae.S., read an extremely interesting and erudite paper on "Modern Developments of Aeroplane Theory" before the Junior Institution of Engineers. Mr. Low dealt in considerable detail with the head resistance of wires on the Farman type machine, working out mathematically the resistance of the wires and the covered body, the stanchions, the non-lifting surfaces, and so forth. He also dealt with the resistance due to maintaining lateral stability, and with a number of other interesting points which, however, would be far too intricate for the understanding of the average man who merely builds a machine that flies.

One learns that Mr. Low's connection with Vickers, Ltd., has ceased, and it is to be hoped he will now be able to devote his undoubted ability entirely to the scientific investigation of aeronautical problems.

A Dirigible for Hendon.

It is quite likely that before long habitués of Hendon will have the opportunity not only of seeing a practical dirigible in working order but of making trips as passengers therein. The Willows Aircraft Company is at present assembling a 60-h.p. dirigible, and it is to be hoped that by the time it is ready the shed will have been erected for it at the London Aerodrome. Such a machine will be a very great added attraction at the Aerodrome, and its establishment there should also be a good thing for the Willows Company, for all the world goes to Hendon when it wants to see anything new.

The Aeronautical Society.

Election.—Members: Maurice Ducrocq and C. R. Fairey. Associate Members: Capt. S. W. Beeman, Col. Fergusson, the Rt. Hon. the Lord Saye and Sele, Lancelot L. Vigers.

Major-General R. M. Ruck, C.B., R.E., has been elected Chairman of the Council for 1913-14.

The following Committees have been appointed:—

(a) Finance Committee: Griffith Brewer, J. H. Ledeboer, F. Handley Page, and Major-General R. M. Ruck.

(b) Inventions Committee: T. W. K. Clarke, B. G. Cooper, Col. H. E. Rawson.

(c) Library Committee: H. F. Lloyd, B. G. Cooper.

(d) Relations Committee: A. E. Berriman, F. Handley Page, Major-General R. M. Ruck.

(e) Research Committee: Harris Booth, T. W. K. Clarke, B. H. Cooper, Col. J. D. Fullerton, B. Melville Jones, Archibald R. Low, Mervyn O'Gorman, F. Handley Page, A. P. Thurston.

The twelfth meeting of the present session will be held on Wednesday, May 7th, at the Royal United Service Institution, Whitehall, when Colonel H. E. Rawson, C.B., R.E., will read a paper, to be followed by a discussion on "Atmospheric Waves, Eddies and Vortices." Dr. H. N. Dickson, D.Sc., President of the Royal Meteorological Society, will preside.

Mr. Horace Darwin, F.R.S., will deliver the first Wilbur Wright Memorial Lecture under the auspices of the Society at the Royal United Service Institution, at 8.30 p.m., on Wednesday, May 21st. Those wishing to join the Society prior to the lecture are requested to send in their application forms immediately, so that their names may be put forward for election at the next Council Meeting.

By arrangement with the Board of Trade the Aeronautical Society have lent the Pilcher Glider and a collection of old prints, photographs, and posters, for exhibition in the British Aeronautical Section of the Ghent International Exhibition.

The Council desires to thank Mr. Eric H. Cliff for the gift of a set of eight aeronautical maps, "Aerodrome to Aerodrome."

—Bertram G. Cooper, Sec.

On the 23rd ultimo the Aeronautical Society held a meeting at the Royal United Services Institute at which a discussion took place on stability. The discussion was interesting, though unfortunately the attendance was comparatively small, probably owing to the meeting being held so late in the year, and it is to be hoped that this most important subject will again be brought up in the middle of the next session so as to ensure the fullest possible attendance.

An Unusual Coincidence.

On Wednesday last Brooklands was favoured by a sight which has never been seen on any other English aerodrome, except, perhaps, at Farnborough, for in the afternoon a monoplane, a biplane, a dirigible, and a spherical balloon all disported themselves over the aerodrome at one time. Mr. Harold Barnwell was up on the No. 5 Vickers at something like 6,000 feet; the new "Beta" from Aldershot, with Lieut. T. G. Hetherington, R.F.C., as pilot, made a circuit of the aerodrome, and went off without landing; Mr. James Radley and Lieut. Waterlow, R.N., arrived at the same time in a Short balloon from Battersea; and Mr. Merriam, on one of the Bristol school biplanes, amused himself by flying circuits round the balloon and dirigible. The balloonists landed for tea, and went off again, reaching Whitney, in Oxfordshire, in the early morning, this being the first balloon to land at Brooklands, though many attempts have been made. After the dirigible had gone, and the balloon was in process of alighting, Mr. Knight, on a Vickers biplane, also amused himself by flying round it.

Bank-Holiday at Brooklands.

On Whit Monday, May 12th, the Whitsun Aeroplane Handicap will be flown. The entrant of the winner will receive 50 sov. or cup at option; the entrant of the second 25 sov. or cup; and the entrant of the third 10 sov. or cup. The event is to be an out and home cross-country race for all classes of aeroplanes. Distance, about 12 miles. Entries close May 3rd, 1913, at 12 noon. Entrance, 1 sov. returnable to starters.

Ten starters, or the race may be void at the option of the executive; or, if not void, the number and value of the prizes may be reduced.

Mr. Harrison Goes to Australia.

Mr. Eric Harrison, the well-known pilot of the Bristol Company, sailed on April 25th for Australia by the steamship "Otway." He is going out to organise the Australian Aviation Corps where he will act in conjunction with Mr. Henry Petre, who went out some months ago. Everybody will wish him and his colleague every success in their new responsibilities.

A French Hydro-aeroplane Race.

A race for Hydro-aeroplanes from Paris to Deauville has been arranged for August 24th. As the race is down the Seine it will not make for seaworthiness, but further competitions at Deauville itself may make up for this.

A Tall Order.

Scene, the Grahame-White Company's Stores at Hendon.—Enter pilot instructor of a firm at Hendon with a petrol gauge glass:—

P. I.: Have you a gauge glass a little larger in the hole than this one?

Stores Clerk: I am afraid we have not.

P. I.: Well, will you please drill this one out larger?

A New Move.

The New Engine Co., Ltd., have removed from their former works at Acton Hill to new and larger works, and their address will in future be Junction Works, Hythe Road, Willesden Junction, N.W. In addition to general machine work and engine and motor-car repairs, the New Engine Co. are greatly extending their wood-working department, a fact which may interest aeroplane constructors requiring quantities of parts.

Concerning Radiators.

The Motor Radiator Manufacturing Co., of Coventry, owing to the enormous demand for their "Zimmerman" patent honeycomb radiator, and to ensure that British motor car and aeroplane manufacturers may obtain prompt delivery of this patented radiator, have granted to John Marston, Ltd., of Wolverhampton, a licence to manufacture them.



His Majesty's Airship "Beta" at Brooklands.

The Week's Work.

MONDAY, April 21st.

R.F.C., Central Flying School.—Very foggy, moderate S.W. wind, rather bumpy. On Maurice Farman 431, Lieut. Shepherd 7 mins alone, with Lieut. Wanklyn 13 mins, with Mr. Eckett 7 mins; Lieut. Wanklyn 10 mins. On Maurice Farman 426, Capt. Salmond with Commander Scarlett, R.N., 25 and 30 mins, 10 mins alone. On B.E. 417, Capt. Salmond 15 mins; Lieut. Stopford 6 and 12 mins.

R.F.C., Farnborough.—On Maurice Farman 305, Lieut. Atkinson 10 mins; Capt. Board 8 mins, 10 mins on Cody biplane, Mr. Cody 20 mins with Lieut. Harrison and 10 mins alone. On Maurice Farman 307, Lieut. Gould 25 mins. and 20 mins with A.M. Morgan. Lieut. Atkinson 10 mins with A.M. Locker.

R.F.C., Lark Hill.—Capt. Conner arrived from Farnborough on Maurice Farman 270. Weather stopped further flying.

R.F.C., Montrose.—Capt. Becke on B.E., followed by Sergt.-Major Fletcher, Sergt.-Major Measures, Sergt. Mullin, and Sergt. Mead. Lieut. Lawrence with Lieut. Joubert on "B.E." Lieuts. Martyn and McLean both on Maurice Farmans, district flights.

Hendon.—At Grahame-White School, Messrs. Carr and Bayetto on No. 2 monoplane circuits. Mr. Lan Davis straights. Sir Bryan Leighton straights with Instructor on No. 7 biplane. Messrs. Bayetto, Carr, and Major further practice.

At W. H. Ewen School, M. Baumann on 35-h.p. Caudron No. 2. Lieut. G. Adams and Messrs. Gist and Goodden short flights. Mr. Turner on brevet 35-h.p. Caudron, and Mr. Zubiaga straights. Mr. Stewart half-circuits.

At Blériot School, Mr. Williams on No. 1 taxi rolling.

At Temple School, at 4.30 a.m., G. L. Temple testing 45-h.p. Blériot. In evening D. Ritchie and A. Vaile 10 mins straights on mono No. 2.

Brooklands.—At Flanders School, Mr. Raynham straights on biplane.

At Vickers School, wind and rain prevented much flying. In afternoon Mr. Barnwell took Mr. Duncan, of Messrs. Vickers, Ltd., circuits on biplane, finishing in rain.

At Bristol School, at 5.10 p.m. Messrs. Bendall and Merriam testing. Mr. Bendall with Mr. Strain; Mr. Merriam with Lieut. Hosking and Major Merrick. Later Mr. Merriam with Lieut. Strong (prospective pupil). Lieuts. Broder, Hosking and Cogan. Mr. Bendall exhibition. Lieut. Edward McClellan circuits. Lieut. Peirse went for certificate, but rain drove everyone into hangars.

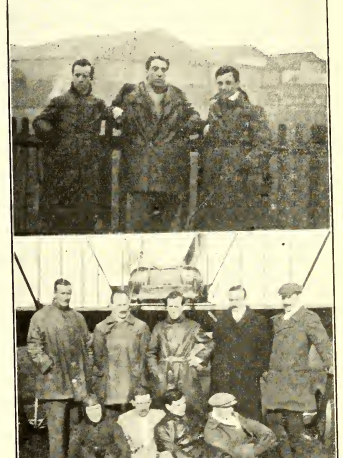
Salisbury Plain (Bristol School).—Mr. Pixton on new tractor biplane, afterwards addition to Messrs. Marshall, Gipps, and Lieut. Chidson. Mr. Busteed with Mr. Delaplane and Lieut. Verdon, R.N. Later Mr. Pixton trial. Afterwards same pupils out again.

Windermere.—Lakes Flying Co., Mr. Stanley Adams on "Water Hen" half hour with passenger.

Willows Aircraft School.—Balloon ascent at 4 p.m. from Welsh Harp. Mr. Willows piloting, accompanied by Mr. H. Barber, Capt. Bernal, and Mr. R. W. Crocker. St Albans Cathedral passed at 5 p.m. After passing through heavy rainstorm the centre of Luton was traversed and landing made at Streatley at 6.30 p.m.

TUESDAY, April 22nd.

R.F.C., Central Flying School.—Bright but cloudy. Slight S.E. wind, varying to East. On Maurice Farman 411, Lieut. Wanklyn 14 mins; A.M. Collis 18 mins; Sergt. Stafford 30 mins; Sergt. Robbins then for brevet test, taking it in excellent style with splendid landings, times 18 and 15 mins. On Maurice Farman 431, Lieut. Wanklyn 40 mins, with Sergt. Robbins 17 mins; Sergt. Robbins 32 mins; Capt. Salmond 17 mins; Sergt. Stafford 9 mins. On Maurice Farman 425, Major Trenchard 9, 10 and 23 mins; A.M. Higginbottom 36 mins. On Maurice Farman 426, Capt. Salmond with Commander Scarlett, R.N., 135 mins, with Capt. Lithgow, R.A.M.C., 12 mins. On B.E. 416, Capt. Salmond 5 mins; Lieut. Shepherd 5 mins. On B.E. 417, Lieut. Stopford 15 mins, with Sergt. Rigby 26 mins, with Petty Officer Grady 12 mins, with A.M. Copper 48 mins; Capt. Salmond 31 mins.



At the Bristol Brooklands School.—Above, left to right: Mr. Merriam, Lieut. Peirse, R.N.V.R., and Mr. Bendall. Below, standing: Lieut. Broder, Major Merrick, Mr. Merriam, Lieut. McClellan, Mr. Grey. Seated: Mr. Strain, Lieut. Hosking, Mr. Bendall, Lieut. Cogan.

R.F.C., Farnborough.—On Maurice Farman 305, Capt. Musgrave 45 mins; Capt. Reynolds 5 mins with Capt. Musgrave, 15 mins alone, 20 mins with Capt. Maywell (Indian Army); Capt. Board 15 mins; Lieut. Atkinson 40 mins. On Cody biplane, Lieut. Harrison 15 mins; Mr. Cody 20 mins, with Capt. Fox, 25 mins alone, 15 mins with A.M. Strickland, 20 mins with A.M.s Piper and Strickland, 12 mins with Capt. Beatty, 18 mins with Capt. Musgrave. On Maurice Farman 307, Capt. Reynolds 10 mins; Lieut. Atkinson 25 mins; Lieut. Waldron 20 mins with Lieut. Arkwright; 20 mins with Capt. Neall; Lieut. Gould 10 mins with A.M. James, 15 mins alone; 30 mins with Lieut. Dairie, 20 mins with Lieut. Mariott; Lieut. Atkinson 10 mins with A.M. Thake.

R.F.C., Lark Hill.—Capt. Fox arrived from Farnborough on B.E. 273, 45 miles in 1 hr 30 mins. On B.E. 272 Lieut. Anderson 15 mins with A.M. Steed. Lieut. Christie 20 mins. Lieut. Wadham 4 mins. On Maurice Farman 214 Lieut. Cholmondeley 22 mins with Sergt. Bruce; Lieut. Aston 7 mins and 14 mins with A.M. Smith. On Maurice Farman 269 Major Higgins 30 mins with A.M. Hobby. On Henry Farman 275 Major Higgins 5 mins with Lieut. Allen and 4 mins with Major Buckle. Lieut. Allen 4 flights totalling 30 mins; Lieut.

Cholmondeley 6 mins, 4 mins. On Henry Farman 277 Major Higgins 37 mins with Lieut. Christie and 5 mins alone.

R.F.C., Montrose.—Capt. Becke on Maurice Farman. Capt. Longcroft to Kirriemuir on B.E. Capt. Herbert to Toops and Brechin on Maurice Farman. Lieut. Lawrence on B.E. to Forfar, and Lieut. Joubert on B.E. to Arbroath. Lieut. Martyn, Lieut. McLean, Lieut. Pepper, and Sergt. Mead all on Maurice Farmans.

Hendon.—At Graham-White School, Mr. Carr circuits and landings. Mr. Major straights and half circuits. Sir Bryan Leighton straights with Instructor. Mr. Birchenough circuits under Mr. Manton. All out again till 7.30 p.m.

At W. H. Ewen School, Mr. Turner and M. Baumann tests. Messrs. Stewart and Zubiaga straights and half-circuits on bervet Caudron. Mr. Turner alone and passenger flights on 60-h.p. Caudron. Also on 35-h.p. Caudron No. 1.

At Deperdussin School, Mr. Spratt on 60-h.p. two-seater 20 mins testing new control wires, then taking passengers all morning; with Mr. Bauman (pupil) 10 mins, with Mr. Whitehouse 20 mins across country. In afternoon with Capt. Halahan. Pilot and passenger over 13 stone each, but machine climbed splendidly. Trip cut short by vibration, on landing two bracing wires under petrol tank found snapped. After repair Mr. Spratt took up Mechanic Barrs. In landing on up grade skid broke and damaged propeller.

At Temple School, Mr. Temple testing 45-h.p. Blériot.

Brooklands.—At Howard Flanders School, Mr. Dukinfield Jones rolling and straights. Mr. Layzell-Apps rolling.

At Vickers School Messrs. Waterfall and Wight both went for bervets on biplane getting through in exceptionally good style. Mr. Waterfall taking 1 min each figure 8. Mr. Andreas straights, and circuits in bumpy breeze, with Mr. Barnwell; Major Cameron same. Mr. Andreas and Major Cameron with Mr. Knight. In evening Mr. Wight first attempt on mono, with Mr. Knight, and alone. Mr. Knight (pupil) on No. 3. Messrs. Barnwell and Knight (pilot) on No. 5 mono. Mr. Barnwell with passenger, Lieut. Blatherwick straights on No. 5. Mr. Andreas with Mr. Barnwell circuits on biplane, and later alone. Then Mr. Orr Paterson (new pupil) with Mr. Barnwell on biplane.

At Bristol School, Mr. Merriam test. Then Lieut. Peirse for ticket. Passed excellently at average of 110 ft. Mr. Bendall with Mr. Strain, Mr. Merriam with Major Merrick, Lieut. Hosking and Mr. Grey, last alone first time. Mr. Merriam with Lieut. Cogan and pupil, and then alone. At 4.30 p.m. Messrs. Bendall and Merriam tests, latter with Mr. Strain, Lieut. Hosking, Major Merrick, and Mr. Grey. Mr. Strain alone. Lieut. Cogan first circuits.

Salisbury Plain (Bristol School).—Mr. Pixton on new tractor biplane finding clouds at 300 ft. Mr. Tower first solo on a biplane. Mr. Marshall with Mr. Pixton round Knighton Down and later Fargo. Mr. Marshall first solo. Mr. Delaplane with Mr. Pixton. Midday, Mr. Busteed trial; 3.0 Mr. Busteed on "sociable" mono. Mr. Pixton with Lieut. Chidson and Mr. Gipps. Later Mr. Pixton with Mr. Gipps, Mr. Delaplane (twice). Lieuts. Chidson and Verdon, R.N. (new pupil). Lieut. Chidson first solo. Messrs. Marshall and Tower alone. Mr. Busteed first flight on new tractor biplane.

Harrogate.—Mr. Harold Blackburn flying new type 50-h.p. Gnome Blackburn mono left Yorkshire Aerodrome, Wakefield, 1.34 p.m. for Harrogate. Reached Leeds at 2.000 ft. The machine fitted with map and compass and Mr. Blackburn made perfect course for Harrogate Stray. Never been to Harrogate before, but arrived exactly at appointed place at 1.52, about time expected. The distance about 18 miles. Arrived at about 1,000 ft., made fine spiral glide and landed in front of Queen's hotel. Descent took five mins. Unfortunately, when about to return, owing to enormous crowd on Stray, had misfortune to smash machine before getting away. Mr. Blackburn not hurt, although greatly disappointed, as this was his first smash.

Liverpool (Waterloo).—Mr. Birch on "V" machine 20 mins, figures of 8 at 500 ft.

Newcastle (Staffs).—Exhibition flights by Mr. Sydney Pickles on Radley-Moorhouse Blériot.

Rhyl.—Mr. Vivian Hewitt flying reconstructed Blériot with great success.

Sheerness.—Mr. Gordon Bell flew two 100-h.p. Gnome Short waterplanes to Grain Island from Harty.

Windermere.—Lakes Flying Co. Mr. Stanley-Adams on "Water Hen" with Mr. Bland (pupil). Then "Sea Bird" circuits. Later Mr. Bland on "Water Hen" with Mr. Stanley Adams as passenger. Mr. Oscar Gnosspelius' reconstructed monoplane taxying.

WEDNESDAY, April 23rd.

R.F.C., Central Flying School.—Moderate East wind. Very bright. On Maurice Farman 411, Lieut. Wanklyn 14 mins alone, with A.M. Keary 10 mins, with Sergt Jukes 19 mins; Sergt. Stafford 23 and 35 mins. On Maurice Farman 426, Capt. Salmond with Commander Scarlett, R.N., 7, 15, 35 and 80 mins; Lieut. Stopford 15 mins; Capt. Salmond 12 mins; Commander Scarlett 15 mins. On B.E. 416, Lieut. Stopford 12 and 18 mins alone, with Sergt. Rigley 16 and 23 mins. On B.E. 417, Capt. Salmond 7 mins. alone, with Capt. Salmond, R.F.A., 45 mins; Lieut. Stopford with A.M. Copper 23 mins. Mr. Busteed from Lark Hill on Bristol mono, returning later.

R.F.C., Farnborough.—On Maurice Farman 307, Lieut. Atkinson 10 mins, with A.M. Thake 10 mins; Lieut. Gould 25 mins with Capt. Board, 45 mins with Lieut. Playfair, 10 mins with Capt. Beor; Capt. Reynolds 15 mins with A.M. Thake. On Maurice Farman 305, Capt. Musgrave 25 mins; Lieut. Atkinson 17 mins; Sergt. Hudson passenger; Lieut. Smith Barry 27 mins with A.M. Thake, 13 mins with Sergt. McKrae; Capt. Board 15 mins. On Coq biplane, Lieut. Harrison 35 mins.

Mr. Gordon Bell arrived on 50 h.p. "S.38" type Short biplane from Eastchurch to Farnborough, non-stop, via Croydon, Ewell, Epsom and Brooklands.

R.F.C., Lark Hill.—On Maurice Farman 269, Major Moss 55 mins reconnoitring over artillery ranges at 2,000 ft., and 10 mins with Lieut. Body. R.F.A.; Lieut. Aston 18 mins with Lieut. Wiseman, R.F.A., 10 mins with Air Mechanic Carter and 12 mins. alone. On Maurice Farman 270 Lieut. Cholmondeley 41 mins., Sergt. Ridd 35 miles in 45 mins with boy Ely, 12 miles in 12 mins with Sergt. Keegan, 13 miles in 14 mins with A.M. Howard, 5 miles in 5 mins with A.M. Hill. On Henry Farman 275, Major Higgins 9 mins with Capt. Scott, 12 mins with Capt. Hill. Lieut. Allen 32 mins with A.M. Barlow, and 21 mins alone. Major Higgins 41 mins on Henry Farman 277, with Lieut. Christie. On B.E. 272 Capt. Allen 80 mins; Lieut. Anderson 21 mins to Shrewton and back, and 35 mins with A.M. Whenman. Lieut. Christie 31 mins. Major Higgins 9 mins; Lieut. Cholmondeley 16 mins; Lieut. Wadham 30 mins, doing two spirals from 4,900 ft. Lieut. Porter 20 mins with Lieut. St. Crane. On Maurice Farman 214 Lieut. Cholmondeley 15 mins alone, 35 mins with Sergt. Bruce and 3 mins with Capt. Conner. Sergt. Ridd 41 mins and 14 mins. Lieut. Aston 15 mins. Sergt. Bruce for bervet on Maurice Farman 214. Second flight 350 ft., landing 8 yards from mark.

R.F.C., Montrose.—Instructional flights to Sergt.-Major Fletcher, Sergt.-Major Measures, Sergts. Mullin and Mead. On Maurice Farman, Sergt. Mead alone. Later, Capt. Longcroft with Capt. Becke as observer on B.E. machine to Barry Camp, return journey at 6,500 ft. and 15 spiral descent. Capt. Herbert with Lieut. Pepper as observer on Maurice Farman to Barry Camps. Lieut. Martyn on Maurice Farman to Bervie. Lieut. McLean on Maurice Farman to St. Cryns. Lieut. Lawrence on B.E. to Glamis. Lieut. Joubert on B.E. to St. Cryns.

Hendon.—At Graham-White School, Mr. R. H. Carr on No. 7 school machine circuits. New pupil, Mr. J. D. North, straights under Instructor Cheeseman. Mr. Major straights. Mr. Leo Davis on No. 2 mono just as it had been tuned up ready for Mr. Bayetto to take bervet, but unfortunately on landing fouled hangar and hull of motor-boat. Sir Bryan Leighton straights with Instructor Cheeseman.

At W. H. Ewen School, Mr. Turner and M. Baumann on 35-h.p. Caudrons. Lieut. Adams and Mr. Goodden straights on No. 2 Caudron; Messrs. Stewart, Warren and Zubiaga straights and half-circuits on No. 1 Caudron. Mr. Turner alone and passenger flights on 60-h.p. Caudron. Mr. W. H. Ewen on the 60-h.p. Caudron with Mr. Gist.

At Bleriot School, Mr Clappen on No. 3.

At Deperdussin School, Mr. Barron on No. 2, 35 mins.

At Temple School, Messrs. R. Penny and M. Lance on mono No. 2. Lieut. Ambler first lesson in controls.

Brooklands.—At Vickers School, Mr. Knight (pilot) with Major Cameron, then straights and circuits alone. Mr. Wight

on No. 3, Lieut. Blatherwick on No. 5, Capt. Wood on No. 5 circuits. Mr. Barnwell on No. 5 with Lieut. Blatherwick, and Major Cameron. Mr. Barnwell on No. 5, then with Mr. Orr Paterson on biplane. Mr. Waterfall and Lieut. Blatherwick on No. 3. Mr. Andreas circuits with Messrs. Knight and Barnwell, then straights alone. Mr. Barnwell on biplane with Messrs. Waterfall and Blatherwick. Mr. Knight evoluting round "Beta." Mr. Barnwell on No. 5 at 5,000 ft.

At Bristol School, Mr. Merriam test with Major Merrick, afterwards with Lieut. Hosking on straights; this pupil then alone for first time. Mr. Bendall testing another machine, then behind Major Merricks on straights. Mr. Strain straights; Lieut. Cogan figures of eight, circuits, etc., and Mr Grey straights. Mr. Merriam with Mr. Strain over Byfleet. Mr. Merriam later saw Army Airship coming, and circled several times over it. Later Mr. Bendall with Lieut. Hosking.

Salisbury Plain (Bristol School).—Mr. Pixton with Mr. Delaplane. Messrs. Marshall and Tower alone. Mr. Pixton with Lieut. Chidson. In the afternoon Mr. Pixton with Mr. Delaplane. Lieut. Chidson and Mr. Marshall alone at 300 ft. Mr. Pixton with Capt. Allen on new tractor biplane. Mr. Tower alone. Mr. Busteed on "sociable" to Upavon. Mr. Tower passed for certificate at about 600 ft.

Windermere.—Lakes Flying Co. Mr. Trotter straights on Mr. Gnosspelius's Blériot with new type float. "Water Hen" with Mr. Stanley Adams alone, and with passenger. Then with Mr. Bland (pupil) at lever and Mr. Stanley Adams as passenger.

Liverpool (Waterloo).—Mr. Melly out on two-seater alone northwards, then circling Altcar Rifle Range, returned to Waterloo, being in the air ½ hour and reaching 700 ft.

Rhyl.—Mr. Vivian Hewitt again out on reconstructed Blériot.

Newcastle (Staffs).—More exhibition flights by Mr. Sydney Pickles on Radley-Moorhouse Blériot.

Willows Aircraft School.—Balloon ascent from Welsh Harp at 7 p.m. Mr. Willows took prospective lady pupil for first ascent, landed at 8 p.m. at Sandy Lodge Golf Course, Northwood, balloon moored to fence and ballasted down. At 11.45 p.m. ascent made with Mr. H. Barber, Capt. Bernal and Mr. R. W. Crocker (pupils), this being night ascent of balllooning course, Landed at Towcester at 3 a.m. Thursday morning.

THURSDAY, April 24th.

R.F.C., Central Flying School.—Moderate E. wind, veering to South. Very bright in forenoon. Freshening wind after lunch and weather dull and misty. Lieut. Marks from Farnborough on new Avro No. 432, time about 50 mins and mean altitude 2,000 ft. On Maurice Farman 411, Lieut. Shepherd 10 mins; A.M. MacNamara 18 and 35 mins; Sergt Stafford 13 mins; Sergt. Robbins 18 mins; Lieut. Wanklyn with A.M. Savill 30 mins, with A.M. MacNamara 5 mins; A.M. Savill 8 mins, first circuit alone; A.M. Collis 25 mins. On Maurice Farman 427, Lieut. Wanklyn 12 mins; Lieut. Shepherd 12 mins. On Maurice Farman 425, Major Trenchard 50 mins; A.M. Higginbottom 70 mins.

On Maurice Farman 426, Capt. Salmond with Commander Scarlett 56 mins; Commander Scarlett with Capt. Salmond 45 mins; Capt. Salmond, R.F.A., 7 mins; Lieut. Shepherd with Commander Scarlett 25 mins; Commander Scarlett 50 mins, for brevet; Lieut. Shepherd with A.M. Lindon 10 mins. On B.E. 416, Capt. Salmond 6 mins alone, with Major Trenchard 25 mins; Lieut. Stopford 5 and 14 mins alone, with Petty Officer Grady 10 mins; Capt. Salmond, R.F.A., 16 mins. On B.E. 417, Capt. Salmond, R.F.A., 14 mins; Lieut. Shepherd 24 mins; Lieut. Stopford with A.M. Copper 45 mins; A.M. Copper 20 mins rolling; Sergt Rigby 15 mins rolling. Capt. Fox arrived in strong wind and thick mist about 7.15 p.m. from Farnborough on Henry Farman-Grahame-White "Wake-up-England" biplane No. 434.

R.F.C., Farnborough.—On Maurice Farman 305, Lieut. Gould 10 mins, 30 mins with Capt. Webb-Bowen; Capt. Musgrave 35 mins; Capt. Reynolds 17 mins with A.M. Griggs; Lieut. Smith-Barry 6 mins with Sergt. Hudson; 23 mins with Lieut. Fletcher, 10 mins with Sergt. Cook; Capt. Board 11 mins, 62 mins with Capt. Webb-Bowen; Lieut. Waldron 15 mins with Lieut. Spence, R.F.A. On Maurice Farman 307, Lieut. Waldron 5 mins, 25 mins with Capt. Neal, 25 mins with Capt. Furse; Capt. Board 25 mins, 45 mins with Capt. Musgrave; Lieut. Atkinson 35 mins with Lieut. Gould; Capt. Reynolds 20 mins with Lieut. Lee; Lieut. Gould 30 mins with Lieut. Atkinson. On Cody biplane, Lieut. Harrison 65 mins; Mr. Cody 15 mins with Major Raleigh. On B.E. 206, Lieut. Waldron 10 mins, 20 mins with A.M. Thomas, 20 mins. with Lieut. Schreiber; Lieut. Smith-Barry 20 mins with Lieut. Drew.

R.F.C., Lark Hill.—On B.E. 272, Lieut. Christie 31 mins; Capt. Allen 18 mins; Lieut. Wadham 23 mins; Lieut. Anderson 34 mins to Andover and back with A.M. Ware, 17 mins alone and 7 mins with Capt. Evans. Lieut. Porter 20 mins with Lieut. Porcelli. On Maurice Farman 270, Sergt. Ridd 10 mins with A.M. Guttry. Lieut. Cholmondeley 11 mins with Capt. Conner. On Maurice Farman 269, Lieut. Aston 25 mins with A.M. Smith. Sergt. Ridd 12 mins; Major Moss 35 mins reconnoitring over artillery ranges at 5,500 ft. On Henry Farman 275, Lieut. Cholmondeley 25 mins; Lieut. Allen 25 mins. Major Higgins on Henry Farman 277, 93 mins.

R.F.C., Montrose.—Capt. Longcroft on B.E. to Dundee, dropping messages to submarines lying in Tay. Lieut. Lawrence on B.E. with Sergt. Jellings to artillery camp at Barry. Lieut. McLean with Lieut. Joubert on Maurice Farman. Capt. Herbert with Lieut. Pepper on Maurice Farman to same camp. Capt. Becke with B.E. giving instruction to Sergt.-Majors Fletcher and Measures and Sergt. Mullins. Sergt.-Major Measures' first flight on Maurice Farman. Sergt. Mead figure 8's on Maurice Farman.

Newcastle (Staffs).—Exhibition flights again by Mr. Sydney Pickles.

Hendon.—At Grahame-White School, Mr. Major straights and half circuits under Instructor Cheeseman. Mr. Carr circuits at brevet height, banking well and good landings. Mr. J. D. North with Instructor Cheeseman. Sir Bryan Leighton with Instructor Cheeseman.

At W. H. Ewen School, Messrs. Turner and Zubiaga circuited No. 1 Caudron. M. Baumann on No. 2 Caudron at 2,000 ft., finishing with beautiful spiral. Lieut. Hicks and Mr. Prosser rolling and hopping on same, and Mr. Frank Goodden straights. Mr. Turner with several passengers on 60-h.p. Caudron.

At Deperdussin School, Mr. Jones (new pupil) first lesson on taxi 2. Mr. Hudson rolling and hopping 10 mins. Mr. Spratt tested No. 5 for Mr. Whitehouse 20 mins at 800 ft. Mr. Whitehouse fine flight for 38 mins, reaching 3,200 ft, and landing with good glide. Mr. Spratt then took same machine up to 3,000. Good performance. Mr. Spratt weighing 13st 7lb. Engine only 35-h.p.. Finished with left and right spiral glide.

At Blériot School, Messrs. Williams and de Villiers rolling on Nos. 1 and 2 respectively. Mr. Slack out on No. 3 with 70-h.p. Gnome for test. Engine much improved.

At Temple School, Mr. Vaile 10 mins on mono No. 2. Mr. Temple exhibition flights on Caudron.

Brooklands.—At Howard Flanders School, Mr. Layell-Apps rolling, and Mr. Dukinfield-Jones straights. Mr. Apps, having accidentally stopped engine at far end of aerodrome, restarted it himself, but had left throttle too wide open. Result—'bus started rolling its own, but fortunately Mr. Apps managed to push rudder hard over as it passed him, and 'bus started describing small circles and was captured after two or three minutes' strenuous running and dodging.

At Vickers School, Mr. Knight (pilot) on biplane; Mr. Andreas circuits at 200 ft. and then eights with Mr. Barnwell and alone. Mr. Knight with Mr. Orr Paterson; Mr. Andreas eights and good glide from 150 ft. In afternoon Mr. Barnwell on biplane with passengers. Later testing No. 3 mono. Messrs. Waterfall and Wight on same. Mr. Knight (pilot) and Mr. Orr Paterson on biplane. Messrs. Blatherwick and Waterfall straights on No. 5. Later, Lieut. Blatherwick at 300 ft. on same, and in clearing another machine in landing, just touched corner of sewage farm, turning machine over, but no damage except to propeller.

At Bristol School, at 5 a.m. Messrs. Bendall and Merriam trial. Lieuts. Cogan and Ed. MacClellan figures of eight. Messrs. Strain and Grey and Lieut. Hosking straights. Mr. Merriam with Major Merrick. Mr. Bendall with Lieut.

Broder. Mr. Strain first circuits. In late afternoon Mr. Merriam with Lieut. Wall. Other pupils also out.

Salisbury Plain (Bristol School).—Mr. Marshall flying well at 400 ft. 15 mins. Mr. Pixton with Mr. Delaplane; Lieut. Chidson round Knighton Down and Fargo at 400 ft. Lieut. Chidson and Mr. Marshall alone. Mr. Busteed on new tractor. Late afternoon Mr. Pixton with Lieuts. Verdon, R.N., and Priestly, R.N., and Mr. Delaplane.

FRIDAY, April 25th.

R.F.C., Central Flying School.—Bright but cloudy, moderate wind, very bumpy. Lieut. Stopford 16 mins on B.E. 417.

R.F.C., Farnborough.—On Maurice Farman 307, Lieut. Gould 10 mins. On B.E. 206, Major Raleigh 15 mins. Mr. Hamel testing Blériot monoplane from R.A.F.

Lakes Flying Co.—Mr. Stanley-Adams on "Water Hen" alone, then with passenger, but wind strong.

Brooklands.—At Bristol School, Mr. Merriam test with Major Merrick. Weather bad.

SATURDAY, April 26th.

R.F.C., Central Flying School.—Strong S.W. wind, very bumpy. Dull. Heavy rains and blizzards from 9 a.m. On Maurice Farman 411, Lieut. Shepherd 5 mins. On B.E. 417, Lieut. Stopford 12 and 14 mins.

Hendon.—One flight by Mr. Hamel with Miss Davies.

SUNDAY, April 27th.

Hendon.—Mr. Hamel made start for Brooklands, but blown down before reaching Edgware Road.

A Busy Workshop.

A few days ago the writer paid a visit to the Sopwith Works at Kingston, and found the place so busy that it can only be described as a "seething hive of industry." Nearly a dozen machines of various types are being put through as quickly as possible, including several Admiralty orders, and a number of waterplanes, one of which is an all-British machine with a 100-h.p. Green engine.

The thing that strikes one most in going round the works is the very high class of workmen employed. In some twenty years' experience of workshops of various kinds the writer has never seen such a high proportion of really intelligent looking mechanics, and the work done in the machines bears witness to the wisdom of employing picked men.

The Reply Complete.

A few days ago at one of our aerodromes a charming young "Society" lady went up to one of our popular pilots and asked him to come to a tea party which was taking place. The pilot excused himself on the plea that he had promised to fly with a certain lady to Brighton, whereupon the would-be hostess went to the lady in question and said, "You really must let Mr. Blank come to our party; all the brilliant dukes will be there." Whereupon the aviatress replied, "I am sorry, but you see Mr. Blank and I have already got an appointment to go to Brighton and see all the shining piers."

From Slow Biplane to Fast Monoplane.

The Vickers School at Brooklands is particularly busy at present a number of new pupils having joined recently. Fortunately, the supply of machines available for pupils' use is increasing in an equal ratio A new biplane for preliminary training arrived last week, and is by now in flying order. The old No. 2 Vickers, which has been altered at the Erith works recently, is expected to arrive in the course of a day or two to be used as a taxi by pupils who have passed the biplane stage, and are going on with the Vickers progressive method of tuition to the monoplanes. The well-known No. 5 Vickers is flying excellently, as is proved by Mr. Barnwell's continual flights at anything over 4,000 ft., and the No. 8 two-seater, which was at the Aero Show, has recently arrived.

Official Arithmetic.

At the smoking concert of the London Sketch Club on April 22nd, the following imaginary message by Mr. Walter Emanuel, of "Punch," was included among those read from notabilities and others "unavoidably prevented" from being present: "Colonel Seely,—Too busy counting our aeroplanes once more. The public seems incapable of realising that a monoplane is 1, and a biplane 2."

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.

For the convenience of Advertisers, replies can be received at the office of The Aeroplane, 166, Piccadilly, W.

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"HOW TO TAKE OUT PATENTS IN ENGLAND AND ABROAD." (By Arthur E. Edwards, F.C.I.P.A.) 2s. post free.—Arthur Edwards and Co., Ltd., Patent Agents and Consulting Engineers, Chancery Lane Station Chambers, W.C. 'Phone 4536 Holborn.

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THE COURSE OF TUITION AT THE GRAHAME-WHITE AVIATION SCHOOL is based upon a very comprehensive knowledge of the needs of pupils. The instructors have had much experience; machines are always available; and pupils are assured of obtaining their brevets with as little delay as possible.—Write for prospectus to THE GRAHAME-WHITE SCHOOL, LONDON AERODROME OFFICES, HENDON, N.W.; or, 166, PICCADILLY, W.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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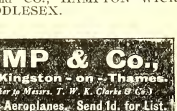
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A New Policy at Hendon.

Readers of The Aeroplane will no doubt be interested to know that during the present season at Hendon special efforts are to be made, not only to stimulate a greater enthusiasm for aviation, but more particularly to enable those who visit Hendon to take a much more intelligent interest in the displays than they have been able to do in the past.

Many visitors to the London Aerodrome do not read the aeronautical papers, and are frequently unable to appreciate the importance or the significance of good performances when they see them. This is simply because they have been without the necessary knowledge. For the future, however, every visitor will be able to obtain a lot of useful and interesting information, as will be seen from the following announcement which appeared in the programme for the "London Day" meeting on April 19th:—

"This is London Day at the London Aerodrome, and it is therefore particularly appropriate to announce a new policy in regard to the weekly meetings.

When the London Aerodrome was first established, only a comparatively few people in England knew what aeroplanes could do. The majority had never even seen one.

During the 1912 season a long series of Meeting and flying displays were given at Hendon with the object of demonstrating the wonderful improvements that had been made in the design and construction of aeroplanes.

These meetings were wonderfully successful. Vast numbers of people visited the London Aerodrome, and the interest aroused in the new science of aviation has proved to be permanent. Hendon is now a recognised institution. It is London's most popular rendezvous. It is also visited regularly by those who, besides seeking a pleasant afternoon's recreation, desire at the same time to keep in close touch with the progress of aviation, and it is in order to meet the growing needs of this class of visitor that a new policy has been decided upon.

It is proposed to include every week in the programme short articles explaining clearly some interesting feature about aeroplanes. The various types of machines at Hendon will from time to time be illustrated and described in detail. The special advantages and usefulness of different kinds of aeroplanes will be carefully explained in a non-technical manner.

The object of all this is to enable visitors to understand and appreciate the flying exhibitions in a way which would be impossible without such knowledge. It is hoped by this means to add considerably to the pleasure of every visit to Hendon, and to make each one more interesting than the last.

For the further convenience of visitors there will shortly be erected at Hendon an Enquiry Bureau, where it will be possible to obtain full information on all points connected with the fascinating science of aviation."

Last week's programme (Saturday, April 26th) contained an illustrated article on the 80-h.p. Henry Farman Biplane. There appeared also a very interesting sketch of the career of Mr. Gustav Hamel by Mr. C. G. Grey, and other popular Hendon pilots will be dealt with week by week.

Special reprints of these programmes have been made, and if any reader of this paper would like copies to present to friends who do not already take an interest in aviation, they will be gladly sent to any address from the London Aerodrome Offices, 166, Piccadilly, W., on receipt of 1d. stamp to cover postage.

There is little doubt that this new policy will help a great deal to advance the cause of aviation, and the proprietors of the London Aerodrome will feel grateful for any assistance they receive in making known as widely as possibly the fresh efforts they are making to popularise flying.

Come to the Hendon MAY MEETING

Next Saturday, May 3rd, 1913

THE Programme for this meeting includes a Grand Speed Handicap, and a 16 mile cross-country event. Between the contests popular Hendon pilots will give demonstrations of flying on modern type machines, as well as passenger flights to visitors.

To meet the convenience of those who are unable to visit Hendon on a Saturday or Sunday, displays of flying are given by famous aviators every Thursday afternoon from 2.30 p.m. On these days a special feature is the practice flights of pupils, which are very interesting and instructive to those who have never seen a learner's first efforts.

WHITSUN

THE Programme for the Whitsun Holidays at Hendon is now practically complete, and should excel in interest any previous meeting. There will be special races Whit Saturday and Whit Monday. On Whit Sunday famous pilots will give exhibition flights.

Details of this three-day meeting will be announced next week.

A New 'Bus Service from Golders Green

IN addition to the 'bus service No. 13, which is extended on Saturdays and Sundays to the Greyhound for the convenience of visitors to the London Aerodrome, there is now a 'bus service No. 83 which runs from Golders Green direct to Collindale Avenue, the road leading to the flying ground.

If you have any doubt as to the best route from your own district to the London Aerodrome, a post card to the London Aerodrome Offices, 166, Piccadilly, W. will bring you full particulars.

Will you do this?

Turn to the back page of last week's "Aeroplane" and see whether you can afford to be without a copy of the book described therein:— "Flying at Hendon."

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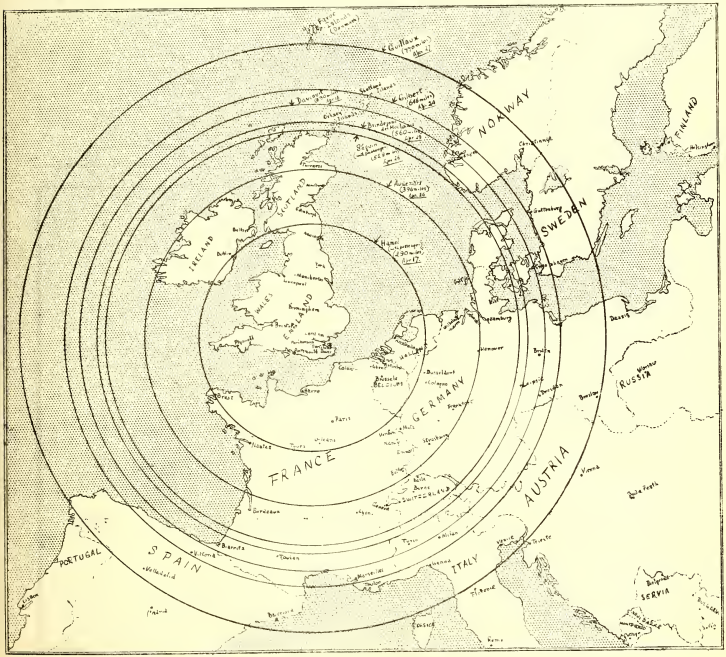
THE AEROPLANE

1d. WEEKLY

Edited by C. G. GREY. ("Aero-Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, MAY 8, 1913. No. 19.

THE LESSON.



The circles on the map show the distances covered IN ONE DAY by the pilots whose names are marked thereon, only that the distances are measured from London instead of from the actual starting places. The lesson should be obvious.



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A Word to British Manufacturers.

There is one class of aeroplane which seems to have been badly neglected almost since the beginning by British manufacturers, and it seems as if that neglect is likely to mean loss of orders. The class in question is the light, fast single-seater, either monoplane or biplane. In the very early days Mr. Howard Wright built the little Avis monoplanes for the Scottish Aeroplane Co.—now defunct—and they did very well in their time, for on one of them Mr. Alan Boyle did the first cross-country on a monoplane in this country. Mr. Charles Lane built one or two somewhat similar machines, which were quite promising. The Bristol Co., in 1911, built several 50-h.p. single-seater monoplanes which were decidedly fast compared with others of the period. Mr. A. V. Roe turned out one or two small biplanes with 35-h.p. Green engines, which, although fitted with two seats, were the beginnings of excellent small biplanes. Beyond these, very little has been done in this country with small, fast machines till quite recently, when the Royal Aircraft Factory turned out a 100-h.p. single-seater "B.E.," with disastrous results to Mr. de Havilland, and A. V. Roe and Co., Ltd., have received an order for a few small single-seat biplanes.

The neglect of the class is undoubtedly due to the conditions for the Military Aeroplane Competition specifying two-seaters, and to the circulation, prior to the publication of those conditions, of the idea that the Army wanted two-seaters and nothing else. It was argued that a two-seater with a slightly more powerful engine could be made as fast as a single-seater, without being made any bigger or more difficult to handle either in the air or on the ground.

During all this period it has been stated time after time in this paper that, both for naval and military purposes, the small, light, fast single-seater is needed and is worth producing. Both Services must have them for long-distance strategic reconnaissance, and both Services will find ultimately that the class has many advantages even for short-distance work where speed, either in flying or climbing, is the first consideration.

On the Continent manufacturers have not made the mistake of neglecting the single-seater. The 50-h.p. Blériot (type XI), similar to the original cross-Channel machine, has remained the favourite mount of many of the finest fliers in the world, whether for aerodrome trick-flying or for straightforward cross-country work. Men like Garros, Simon, Hamel, Hucks, Morane, Perreyon, Legagneux, Radley, Moorhouse, Morison, Chavez, and others who have done some of the finest flights in the world, made and maintained their reputations on single-seat Blériots; while others, such as Védrines, Guillaux, Weymann, and Gilbert, who were originally biplane pilots of high class, only displayed their full ability when put on to high-speed single-seated Deperdussins, Nieuports, Moranes, Borels, Caudrons, or Clements.

Recent Lessons.

The competition for the Pommery Cup has shown more conclusively than anything else could do the advantages of the single-seater for really high-speed work across country. A competition of this kind makes economy of fuel of the first importance—therefore the smaller the horse-power the better. A big machine means a big engine, which means more fuel, which means landing more often for replenishment, which means delay. As a result, we see Daucourt using a 50-h.p. Gnome, Gilbert a 63-h.p. Le Rhône, and Guillaux a 60-h.p. Clergêt: small men on small machines with small engines.

I am not forgetting Séguin's magnificent flight on the big Farman with a passenger, but compare his first stage, from Marseilles to Dijon, with Guillaux's from Biarritz to Villacoublay, just outside Paris. Both flights were done on the same day at about the same time, so they offer a fair comparison. The other pilots had worse weather, but their stages were much longer than Séguin's. Surely the comparison of these flights should teach a lesson both to the Army and to manufacturers.

The Single-seat Waterplane.

The flying of Garros on the tiny single-seat Morane waterplane at Monaco was also a useful lesson to the Navy, though in rather a different way, for it conveyed the idea that a very small single-seater with a very powerful engine could be used when a large, heavy machine could not. Garros never went out when there was a sea running, but the way he got off the water after a run of a few yards inside the harbour suggested that when a high-speed scout is needed in coast-defence work, a little machine which will get up quickly off calm water in even a small harbour may have advantages over a big, heavy machine which must perforce go outside the breakwater into the open sea in order to get a long enough run. The very big machine is absolutely necessary as a destroyer, but the very little one has its uses.

Also, it appeared that such a small machine, if compelled to go out into really rough water, might have advantages of its own, for it seemed as if, by rushing down into the trough of a wave and up the slope of the next, it might jump clear of the crest by sheer engine-power, at an angle impossible for a bigger and heavier machine; and it was obvious that so long as makers of waterplanes insist on using rigid struts between the floats and the fuselage, a light affair of this kind is much less likely to buckle

its chassis or burst its floats by hitting wave-tops at high speed in getting off or alighting than are the heavier two-seaters. The experiences of the Borel, Nieuport, and Deperdussin monoplanes at Monaco showed the mistake of making a small, heavy two-seater for sea work with a rigid chassis; and a sprung chassis means extra weight, which means more surface and bigger floats, which means more power, which again means more weight and more surface and bigger floats—the circle repeating itself till one arrives at the really big waterplane, too cumbersome to be carried on board ship, and only fit for coast-defence work, because it is too big to be carried and not big enough to cruise on its own bottom—a useful type, but not what is wanted with a fleet at sea. The little single-seater à la Garros can be stowed away on board ship easily, and so may be useful to-day while the Naval Air Department is experimenting with the still smaller and lighter machine to be launched from a catapult. This latter type is not likely to be made a very practical proposition for a year or two, whereas the small, light, single-seater with ordinary floats is a thing the Navy wants to-day and will buy in respectable numbers if it can get them.

Loss of Business.

As I have shown, there is business to be done in these light, fast, single-seaters with both the Navy and Army. The Navy is ready and anxious to buy anything that is good, and it has more money for experimental purchases than has the Army. Even the Army, despite the various departments and committees at the War Office, and despite the Royal Aircraft Factory's endeavours to "crab" everything that is not of their own design, must eventually buy what the flying officers of the R.F.C. like best, and there are many of the best pilots of the military wing who not only believe in fast single-seaters, but are anxious to fly them, and, for all Colonel Seely's panic, they generally prefer monoplanes—just as some of the very finest civilian pilots here and abroad prefer monoplanes for fast cross-country work. Consequently the Army must buy fast single-seaters. The Royal Aircraft Factory knows this, hence the production of the ill-fated 91 m.p.h. 100-h.p. monocoque "B.E.," which would have been excellent if the designer had not forgotten its stability.

Is there any British maker with machines ready built who can execute orders for this class of business immediately he is asked? I do not know of any at the moment.

This paper has done its best for the British manufacturer. It has risked libel actions from foreign makers by pointing out defects in their machines, and has in one case had to pay good money out to avoid the expense of fighting a foreign maker who has since admitted that the alleged libel was the truth. It has thrown away advertisements from foreign makers by sticking up for the ability of British manufacturers to make aeroplanes as well as and better than those made abroad. In its efforts to help in the building up of a healthy British industry which can supply the Royal Flying Corps adequately in time of war it has made itself distinctly unpopular in certain official circles, when it might have paid better to have "spoken words pleasant unto the King." It has even on occasion earned acute dislike by acting the candid friend and telling the British manufacturer the truth about himself.

The person who gives good advice is ever unpopular, and to say "I told you so," generally increases that unpopularity. However, I am willing to take the risk. Remember that The Aeroplane condemned the lifting-tail box-kite. Remember that it foretold the coming of the tractor biplane. Remember that it said that the Services were to be the only customers immediately worth considering. Remember that its influence with the outside Press led the agitation which helped to free military aviation from the grasp of the Royal Engineers. Remember that it was the first paper to draw attention to the importance of the waterplane for this country. Look back in your memories and see how often The Aeroplane has foretold the things which have happened, and how seldom it has been wrong. I am not recalling these facts for the glorification of the paper nor to claim any gift of prescience for its staff. The fact that it has always been in front, and has almost always been correct, is simply because it is in touch personally with the men who do things and the men who know what must be done. Some of its apparent prophecies have been statements of facts, the rest have merely been the result of following to their logical conclusion the state of things as they were at the time. I am simply drawing attention to these facts so as to point out that statements made in this paper are not the outcome of either guess-work or prejudice, they are just plain, common-sense conclusions based on fairly sound premises.

The particular point I want to drive home in this instance is that the British manufacturer has as fine a chance to-day of getting business as he has ever had. He can build light, fast, single-seaters and sell them, because both the Navy and Army want them, and he can build big, powerful waterplanes for the Navy, who will buy them gladly if they are good. Also, he can supply medium size waterplanes to the Navy for immediate use, as makeshifts while something better is being evolved. If the British manufacturer cannot supply such machines, then the orders will go abroad. Some of them are going abroad already, simply because the machines cannot be got at once in this country. Those orders ought not to be going abroad.—C. G. G.

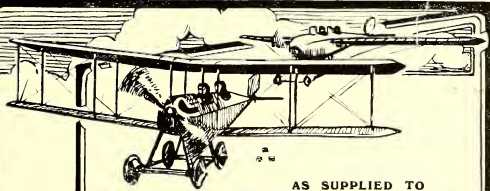
An Apology to Colonel Seely.

Owing to an oversight the number of aeroplanes now on order from British manufacturers was under-estimated in the figures given last week. There are still seven biplanes to be delivered by Bréguet Aeroplanes, Ltd., so that the figures for the number of machines not in possession of the Royal Flying Corps should be increased by that amount. Not being in an official position, I am fortunately at liberty to correct errors in my statements or inaccuracy in information acquired. Apologies are tendered to Colonel Seely and his department for that I have unintentionally represented that the Army is to possess—some day—a smaller number of aeroplanes than that for which provision has been made.—C. G. G.

Presentation to Mr. G. B. Cockburn.

On Monday, April 28th, Colonel Holden, vice-chairman of the Royal Aero Club, on behalf of members of various committees of the Club, presented Mr. G. B. Cockburn with a stop-watch, suitably engraved, as a token of good wishes on the occasion of his recent marriage. In these good wishes everyone who knows Mr. Cockburn will join with the greatest goodwill.

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The French Aeronautic Services.

BY W. E. de B. WHITTAKER.

The two great principles of government can be briefly stated in two words—centralisation and decentralisation. In the theories implied by these two words is hidden all that concerns autocracies or democracies. Autocratic rule is invariably a centralised system. Decentralisation comes when the people are entrusted with the figment of power. An autocracy is ideal while a strong and capable man governs the destinies of the nation. But when he dies his successor may combine the vices of Caligula with the impotence of Louis XVIII of France. Then confusion succeeds efficiency and the country loses its place in the council of nations. On the other hand a modified democracy, while it never attains brilliancy, rarely descends to utter ruin. Autocracies appeal to rising nations whilst democracies coincide with the dying of ambition.

In the Golden Age of France, when the Lilies of Bourbon went to victory with the legions of Louis XIV, the power of one man led the nation. France was supreme in the world. The King's bugles were heard in the darkest forests of New France and on the sunny plains of India. The earth, East and West, knew but one master. But this Empire only endured for a space. Those who came afterwards were incompetent and weak, and that very centralisation of control which had assisted so greatly to bring France to its proud position was also the cause of its downfall. The Revolution came and passed, but the underlying principle of government remained the same. De Tocqueville says that "the democratic Revolution which destroyed so many of the institutions of the French monarchy served, therefore, to consolidate the centralised administration, and centralisation seemed so naturally to find its place in society which the Revolution had formed that it might well be taken for its offspring."

The French publicists of the last hundred years have had a clear appreciation of the advantages and the dangers of this system of government, and realising that the necessary strong man is not at all times available, they have latterly endeavoured to graft on to the constitution of the Third Republic a degree of decentralisation. Local and municipal government has been encouraged and with excellent results.

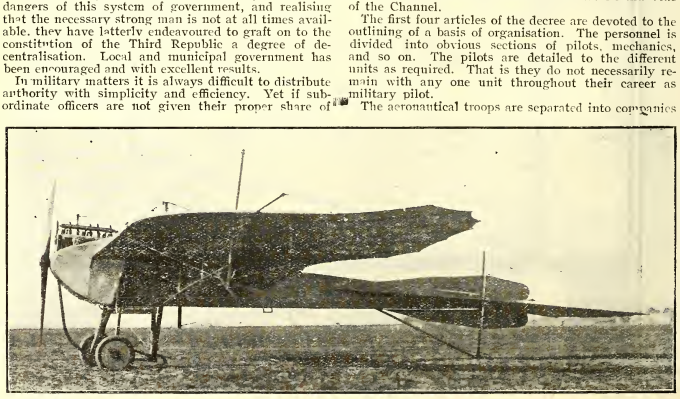
In military matters it is always difficult to distribute authority with simplicity and efficiency. Yet if subordinate officers are not given their proper share of responsibility at all times they will in many cases fail in critical times. That this is so was clearly shown in the Franco-German war. Either one must have a great leader or a clear system of delegated authority.

The French aeronautical services have so far been united under a single centralised control whence all orders and all decisions came. In aeronautic matters flying officers were under the orders of the Inspector-General of Aeronautics. In matters of discipline and ordinary routine they were under the local G.O.C. All manner of abuses arose under this system. A centralised authority has to rely to a high degree on the personal integrity of its officers or alternatively on an elaborate system of espionage. Both methods are unsatisfactory. It is essential that each officer commanding a unit shall be made personally responsible for the efficiency of that unit. Under the old system in France an escadrille in one part of the country might work night and day in the interests of the service, whilst elsewhere another escadrille would do no work from week-end to week-end. Yet the first would not of necessity be praised and the second censured. Unless the Inspector-General personally visited both those places it is probable that no attention would be given to either.

As stated in THE AEROPLANE of last week, the French Minister of War signed a decree on April 16th modifying the constitution of the flying corps. In this the commanders of units are made responsible for the efficiency of their units in all that concerns flying and are under the orders of the general officers commanding Army Corps districts. The experience gained in the last three years has sufficed to permit of the Ministry of War drafting a complete and (to a large extent) new organisation. The French were ever excellent in these matters. It differs from the English organisation as completely as does the general military system of France. But from this very reason does its consideration become of some interest on this side of the Channel.

The first four articles of the decree are devoted to the outlining of a basis of organisation. The personnel is divided into obvious sections of pilots, mechanics, and so on. The pilots are detailed to the different units as required. That is they do not necessarily remain with any one unit throughout their career as military pilot.

The aeronautical troops are separated into companies



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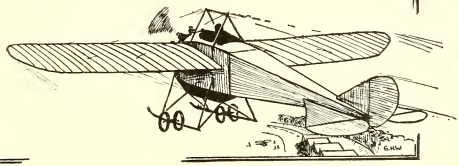
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and sections, the former dealing with aerostation and the latter with aviation.

Each aerostation company is stationed at and forms a "port d'attache." Its duties consist in the maintenance and operation of the spherical and dirigible balloons of the station and in the upkeep of aeronautical matériel necessary for the use of the attached airships and of visiting dirigibles. Each company trains its own personnel with the exception of certain specialists, who receive instruction at one of the great aeronautic establishments. The pilots and mechanics, trained or in training, of each dirigible are on the effective establishment of the company at the particular "port d'attache" at which the balloon is stationed.

The officer commanding each dirigible is responsible for the efficiency of his balloon and for the maintenance of the matériel required for the upkeep of that machine. He is under the orders of the officer commanding the "port d'attache."

Each aeronautic section (aviation) is divided into administration and "escadrilles." As in the case of the aeronautic companies the sections undertake the technical instruction of their personnel with the same exception as to specialists. Further, each section is responsible for the maintenance of necessary matériel.

Detachments from these sections and companies, and in some cases entire units are detached for the staffing of what are termed in the French service "établissements." These include, 1, Schools; 2, Special Establishments; 3, "Directions"; 4, Depots and workshops.

The first class of "établissements" are schools for the training of flying personnel, and consist of a permanent staff and pupils. Each is an aeronautical section. They also act as depots and in some cases as workshops.

The second class construct and purchase matériel and carry out certain types of repairs and experimentation of an advanced nature. They have charge of all aeronautical matériel before its issue to the units, and the military aeronautical laboratories are also under their control.

The "directions" control the administration of technical matériel and are disposed one to each army corps in which there are any aeronautical establishments.

The depots and workshops control the maintenance and administration of all matériel in service or in reserve.

(To be continued.)

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty appointments, May 3rd:—

Royal Marines.—Lieutenants, R.M.L.I.—Ivor T. Courtney and G. J. Wildman Lushington, R.M.A., to the "Actæon," additional, for staff of Royal Naval Flying School, as Flight Commanders, with temporary rank of captain, to date April 15th; Charles E. Rathbone, R.M.L.I., to the "Actæon," additional, as flying officer, to be attached to the Royal Naval Flying School temporarily, to date April 17th.

Royal Naval Reserve.—I. G. V. Fowler has been appointed to the "President," additional, as probationary sub-lieut., for course of instruction at Central Flying School, to date May 17th.

From the "London Gazette," May 2nd. War Office, Regular Forces:—

Royal Flying Corps, Military Wing.—The following to be flying officers:—Lieut. W. Lawrence, 7th Batt. Essex Regt. (December 6th, 1912); Lieut. A. C. H. MacLean, Royal Scots (Lothian Regt.), and to be seconded (April 11th); Capt. W. D. Beatty, R.E. (April 15th); Capt. A. G. Board, South Wales Borderers, and to be seconded (April 18th).

Special Reserve of Officers.—Royal Flying Corps, Military Wing.—Sec. Lieut. (on probation) W. E. Gibson resigns his commission (May 3rd).

The Indian Government have apparently at last made a move in the direction of forming an aviation corps. It is announced that four officers have been selected to undergo a long course of training at the Central Flying School, Upavon. Their names are as follows: Captain Massy, 29th Punjabis (O.C.); Captain Hoare, 30th Central India Horse; Lieutenant Newall, 2nd Gurkhas; and Lieutenant Reilly, 82nd Punjabis. After training, they are to form the staff of an Indian flying school.

The staff of flying officers of Squadron No. 2, stationed at Montrose, has been added to this week by the arrival of five officer-pilots.

These have taken up their duties, and are to be on the permanent establishment. The newly-joined officers are Capt. H. C. McDonell (Royal Irish Regiment), Capt. F. St. George Tucker (Worcester Regiment), Lieut. L. Dawes (Middlesex Regiment), Lieut. Desmond L. Arthur (Royal Munster Fusiliers, Special Reserve), and Lieut. A. M. Read (Northampton Regiment).

Sergt. Mead passed the tests for his pilot-aviator's certificate before Capt. Longcroft and Lieut. McLean on May 2nd.

Major Gerrard, R.M.L.I., with two passengers, reached a height of about 9,500 ft. at Upavon on May 1st. If officially confirmed this is a world's record.

FRANCE.

On April 28th, at Reims, Lieutenant-aviator Broccard (attached Reims centre) made a successful attempt on the height record with two passengers. Flying a Deperdussin monoplane (80-h.p. Gnome), accompanied by Corporal Henriot and Sapper Chaput, he rose to a height of 7,475 ft. in one hour and thirty-five minutes. This is the second world's record created by a French officer, Capt. Felix having put up the height record in August, 1911.

The escadrille of Henry Farman biplanes (80-h.p. Gnomes) stationed at Biskra under the command of Lieutenant-aviator Reimbert left on April 24th and reached Constantine, a distance of 164 miles in two hours and a half. The four machines were piloted by Lieutenants Reimbert (C.O.), Cheutin, and Jolain, and Quartermaster Hurard, each accompanied by a mechanic and a passenger. At Constantine the escadrille is to take part in garrison manœuvres under Generals Legay and Archinard.

The Ministry of War has decided to form an aviation station at Troyes. A range of barracks to house 100 men is to be erected at La Chapelle-Saint-Luc, by the Paris road. Workshops and hangars are to be built on a large open space near the town.

The manœuvring ground at Menneton, near Tours, has been examined by Capt. Marconnet and M. Zirnheld on behalf of the Comite National de l'Aviation Militaire. They were quite satisfied as to the desirability of opening a ground at this point. The R.E.P. escadrille, in which are Lieutenants Precardin and Campagne, has landed here several times. The number of grounds suitable for aviation is increasing rapidly in France.

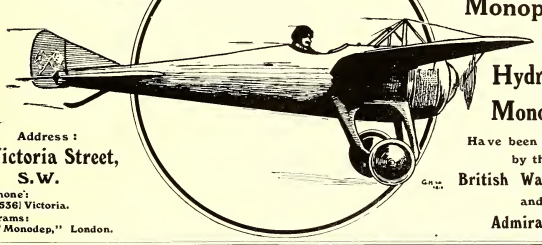
On April 28th Lieutenant de Gensac flew from Buc to the Camp de Chalons on a newly-delivered Henry Farman biplane (80-h.p. Gnome). His average height was 6,000 feet. On the following day, in company with Lieutenant-aviator Challe and Sous-officier Damberville on other Henry Farman biplanes, he made a circuit of Mourmelon, Chalons, Suippes, and Mourmelon.

Lieutenant-aviator Soleilland, attached to the aviation centre in Morocco, was flying a Blériot monoplane in company with other machines of his escadrille from Nekhila to Merada on April 26th when he disappeared. Till late in the day no news arrived as to his whereabouts. Information then arrived that he had landed four miles from Nekhila owing to a failing motor, where he was found by a patrol of Spahis. He returned to Nekhila by road.

The Blériot escadrille in Morocco has of recent days been hard at work making cross-country flights of some length

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Lieutenant-aviator de la Morlaye, who is flying the Blériot two-seater "Le Madagascar," flew with dispatches from Casablanca to Oued-Zem (126 miles) and back. Later, he flew from Casablanca to Marrakesh (250 miles). M. le Comte de Lareinty-Tholozan, who is serving as officer on the reserve, travelled by air from Casablanca to Kasbah-Ben-Ahmed (100 miles), then to Marrakesh (125 miles), and later rejoined the column under Mangin at El Borouj (90 miles). Jacques Balsan, captain of reserve, arrived in Morocco on April 20th.—W.

On April 29th, at Chalons, a new Henry Farman biplane was put through some interesting trials by M. Chevillard before a military commission.

This machine, which is small, has been designed to the requirements of the French artillery, its particular feature being the ease and speed with which it may be dismantled and reassembled. The times taken were as follows :—

First test—the machine, ready to fly, was dismantled and packed in its case in 12 mins. 45 secs.

Second test—the machine was taken out of its case and assembled, ready to fly, in 20 mins. 34 secs.

This test was followed immediately by a flight of 5 mins., in the course of which it rose to a height of 300 metres.

Third test—the machine, on landing, was again dismantled and packed ready to travel in 11 mins. 45 secs.

Fourth test—the machine was again unpacked and assembled in 17 mins. 21 secs.

This test was followed immediately by three flights of 5 mins. each, fully laden, during the first of which it rose to a height of 500 metres, and in the two subsequent ones to a height of 600 metres. After this an endurance flight of one hour was made, the machine being fully laden.—A. B.

GERMANY.

On April 26th naval manœuvres began in the neighbourhood of Heligoland. For the first time in the history of nations a dirigible balloon will play its part. The Zeppelin L.1 is detailed for this purpose. The prevailing opinion in Germany is that for naval warfare the aeroplane is a negligible quantity and that the dirigible alone is of high value.

Lieuts. Zwickau and Kling left Metz on April 29th on a biplane. When near Aschbach, near Gertweller, they tried to land. The right wing-tip touched ground and the machine overturned. Both officers were seriously injured.—W.

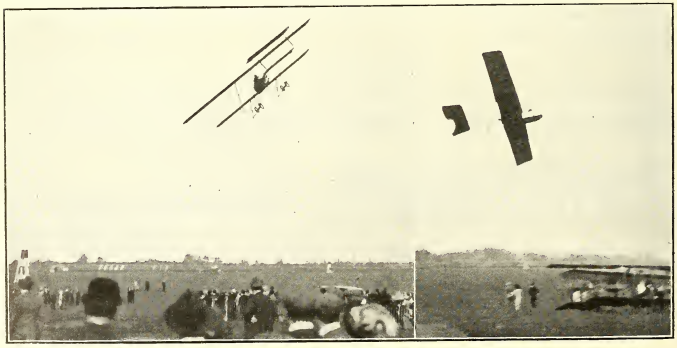
Whilst the German Emperor was at Strassburg on April 26th, he paid a visit to the wonderful old Hohkönigsburg, a restored mediæval castle in its neighbourhood, and this was made the destination of eight military aeroplanes, five biplanes and three Doves, which circled over the castle and executed a series of interesting manœuvres, watched by the Emperor and his guests.

The new Leipzig airship station and aviation ground will be opened by the King of Saxony on June 22nd, when Count Zeppelin himself will bring the passenger cruiser "Sachsen" to Leipzig and make a short trip with the King as guest.

April 30th, the last day of the capricious month, witnessed a fatal accident at Darmstadt, which involved two deaths. One of the ill-fated military aviators was Lieut. von Mirbach, who, with Capt. von. Dewall, "made history" only a few days previous by landing at Arrancourt, near Lunéville. He did not long survive this incident. Flying with Lieut. von Brunn as passenger, von Mirbach was in the act of landing, and only about seven yards from the ground when the machine apparently crumpled up and buried the two men in the debris. Von Mibach lived for another half hour, his companion expired soon after admittance into hospital. The aeroplane was an Euler of an antiquated type. Von Mirbach possessed both his ordinary and a field pilot brevet. An ill star seems to shadow the German military flying men, for, as though the above were not sufficient evil, another rift has been made in their list by the demise of Lieut. von Ledebour, who, however, came to grief whilst motor-cycling in the vicinity of Brandenburg. Owing to a tyre bursting suddenly he was flung against a tree and died of concussion of the brain. Then, at Strassburg, Lieut. Wendler, who met with a severe accident whilst testing a machine at the military ground on the Polygon, is lying in a most precarious condition, as he has suffered compound fractures of both legs and arms, broken his nose, and it is feared that internal complications may ensue.—B.

BELGIUM.

The work at Brasschaet and Saint-Job continues with as much vigour and keenness as ever. The machines are all Belgian-built Henry Farman biplanes (80-h.p. Gnomes). Lieutenant-aviators Nelis, Deschamps, Dhanis, Schmidt, Lebon, and Moulin are all still attached to the corps and make long flights daily. Lieutenant Stellingwerff, who, with Lieutenant Nelis, was the first to make firing experiments with a mitrailleuse from an aeroplane (in September, 1911), has now temporarily left the aviation corps for service at the Ministry of War.—W.



Studies in banking. M. Verrier (Maurice Farman biplane) and M. Chevillard (H. Farman biplane) make turns at Hendon.

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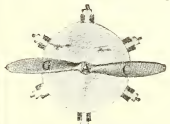
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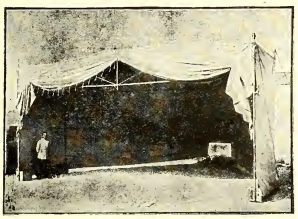
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U.S.A.

The following is the most recent specification for a military aeroplane issued by the War Department at Washington:

Requirements for Scout Type Military Aeroplanes.—General requirements:—

1. Enclosed body.

2. Protective armour for aviators and engine. This armour shall be made of chrome steel and about .075 in. thick. The armour shall be subject to the Ordnance Department penetration test for small arm fire before being placed on any machine.

3. The following instruments and radio equipment shall be placed on each machine by the manufacturers and shall be considered a part thereof:—(1) Tachometer; (2) Compass; (3) Aneroid barometer; (4) Barograph; (5) Map-holder; (6) Pad and pencil-holder; (7) Clock; (8) Angle of incidence indicator. All of the above instruments shall be of the make and type approved and furnished by the Signal Corps, U.S. Army.

4. Provisions for a radio apparatus shall be made on each machine. This apparatus shall be furnished by the Signal Corps, drawings and specifications of which will be furnished to the manufacturer by the Signal Office. The base for the generator shall be part of the engine base. The generator will be driven by chain or gear from the engine unless a generator is selected which is mounted as part of the engine. The hanging antenna should be as nearly under the centre of gravity as possible. This antenna shall be arranged to unwind readily from a reel and fixed so that it can cut loose when desired with some foot mechanism. It is estimated that the weight of radio telegraphic apparatus will be about 75 pounds.

All of the above instruments and the keys for operating the radio apparatus shall be within easy reach of the pilot and observer.

5. The power plant of each aeroplane may be designated by the Chief Signal Officer, U.S. Army. When so specified, it shall be given a six-hours' test on the block to determine its h.p., speed and gasoline and oil consumption before being installed in the machine. The h.p. of the motor will be designated by the manufacturer, who will be responsible that the aeroplane fulfills the actual air tests when the motor is turning out the h.p. that he specifies. The Chief Signal Officer will be responsible for the reliability and h.p. of any power plant that it specifies or purchases for installation in aeroplanes.

6. Upon delivery for tests the manufacturer will furnish the following data concerning the aeroplane:—(a) Weight; (b) Normal angle of incidence in horizontal flight; (c) Gliding angle; (d) Gasoline and oil consumption of engine;; (e) Safe increase angle of incidence; (f) Two blueprints of engine and aeroplane.

The following air tests shall be passed by each aeroplane before it is accepted by the Government:—

1. The aeroplane must carry two people with seats located to permit the largest field of observation for both.

2. The control must be capable of being used either by pilot or observer.

3. The machine must be able to ascend at least 2,000 feet in ten minutes, while carrying a live load of 450 lbs., and fuel and oil for four hours' consumption. This live load will be made up of the operator and observer and such other weight as may be put in the enclosed body to make up the 450 lbs. The live load does not include the weight of the instruments and radio telegraphic equipment, which are part of the machine. This live load is to be carried in all the prescribed flying tests except the test in paragraph 10.

4. The machine must be capable of being transported by road, in which case its width must not exceed 10 ft. The construction must be such that it can be assembled for flight within one hour by six men.

5. The engine must be capable of being so throttled as to allow one person to make a flight without any other person assisting. This test to be made by the operator starting the engine and making a flight without any assistance.

6. The machine must complete a continuous flight for four hours, the first part of which shall be a non-stop, cross-country flight of at least 180 miles over a course designated by the Board conducting the tests. The flight may be completed over the aviation field.

7. The machine must have a minimum speed of not more than 38 miles per hour, and a maximum speed of not less than 55 miles an hour. The maximum and minimum speed must be measured by the machine flying over a course.

8. The machine must be capable of landing on and flying from harrowed ground and long grass within 100 yards.

9. The machine must be capable of safe gliding.

10. The efficiency and reliability of the system of control must be demonstrated as follows: The aeroplane must be capable of executing a figure eight within a rectangle of 500 yards by 250 yards, without decreasing its altitude more than 100 feet upon the completion of the figure eight. This test may be made by the aviator alone.

11. Manufacturers must provide a name plate for each machine, giving necessary data such as maker's type and serial number. Painting of names or similar data on any part of the machine is prohibited.

12. The manufacturers shall furnish the demonstrators for all tests.

13. The system of control must be of a pattern approved by the Board of Officers conducting the tests.

14. The suitability of each machine for military purposes shall be determined by a Board of Officer Aviators appointed by the proper authority, who shall conduct all tests.

15. The following desirable features will give the machine a higher rating under paragraph 14:—(a) An effective silencer with cut-out on the engine; (b) An actual flight in a 20-mile wind without damage to machine; (c) Engine started from within the enclosed body; (d); An efficient stabilising device

Foreign Notes.

France.

The Spiess rigid dirigible balloon made its first flight at Saint Cyr on April 30th. It was piloted by M. le Comte de la Vaulx with M. Schelcher in charge of the elevator. No particulars are given of the flight save that the controls worked with perfect precision and the experiment was successful.

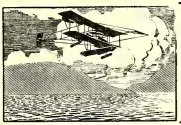
M. Etienne Giraud has lately been at Montpellier for some little time flying a two-seater Blériot monoplane (80-h.p. Gnome). Each day he made flights over the Mediterranean, accompanied on each occasion by a friend. The majority of his flights are made at an average altitude of 6,000 ft.

The Morane-Saulnier firm is apparently making a collection of the finest pilots in France. Garros and Legagneux have flown these machines for some time, and now it is stated that Vedrines has a Morane-Saulnier monoplane. Other pilots with the firm are Gilbert and Vidart. The latter has recently made several flights of distinction over Lyons. His centre is still Amberieu, where, a little time ago, he was the head of the Deperdussin school.

Germany.

The programme for the Lake Constance Hydro-aeroplane week, from June 29th to July 5th, has now been published and makes most interesting reading. The events are open to machines built in their main parts, such as fuselage, wings, float, chassis (motor excepted) in Germany, and piloted by aviators of German nationality and foreigners resident in Germany prior to April 1st and in the employ of a German firm. Entries close on June 15th, and must be accompanied by a fee of 500 marks per machine. The chief contest is the Lake Constance prize of 40,000 marks and a trophy presented by the Admiralty. The course is one of 200 kilometres, or twice around the lake, starting from the land. The first lap comprises landing in a 500 metres square marked by buoys, where the propeller has to be brought to a standstill and then a restart made. The finish is near Constance on the water. On the conclusion of the flight another trial can be made if desired, the best time being noted. The other events comprise an altitude contest of 500 metres in the shortest time and a 100-kilometre flight with a turning-point on the water. There are a number of minor prizes for machines flying a distance of 200 metres (a) from a start on terra firma, (b) from the water, (c) for a water flight with shut-off power, whilst the mechanicians in the principal events

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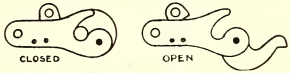


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are not forgotten either. The German Admiralty reserves to itself the right of purchasing two machines if they satisfy in a series of trials to be made at Danzig-Putzig consequent on the Lake Constance week. These trials will not be public.

A monument is to be raised at Johannisthal in honour of the German aviators who met with their death whilst flying. Their names will be inscribed on the monument.

The Fokker Works are opening a new aviation station and school near Goerries, in Mecklenburg, but their works themselves remain at Johannisthal.

Germany's black Thursday, April 24th, has demanded another death, this making three in all, as Lieut. von. Germersheim succumbed to his injuries on April 26th, two days after his accident on the Munich-Schleissheim ground. The officer, one of the best Bavarian Army pilots, never recovered his senses. His passenger, Lieut. Schirnerer, is progressing satisfactorily. Elia Dunetz, the first of the three pilots to fall a victim to his profession, was buried at Berlin on Sunday, all the Army and Navy aviators, members of the various aviation corporations, accompanying the hearse of the young Russian, who fled his home country after having served a term of imprisonment as a revolutionary. His name in reality was Loria, but friends assisted him to escape from Russia with papers made out in the name of Dunetz, which he adopted henceforth. Abramowitch's body has been taken to Russia for interment.—B.

The Jeannin Steel Aeroplane.

The makers of the Jeannin aeroplanes state that superior as steel is to wood for constructing flying machines, the latter being much less reliable and more easily affected by damp and heat, yet a thorough experience of steel and the observation of several years, especially as regards joints, is absolutely necessary to enable the constructor to turn out machines essentially stronger than the average. The firm believes that it has attained this object. In wooden machines, which have been put to long and exacting use, the joints, whether bolted or bound, will be found to become loose, as the bolts loosen themselves dangerously by working about in the softer wood.

On the other hand, Jeannin machines have now been used daily for six months, making 2,000 starts and landings on frozen ground, without any of the parts loosening or giving way. But it is not only the use of steel, but the shaping of it to the greatest advantage which gives qualities unobtainable in wooden machines. Thus the front of the body on both sides comes to a point behind the passenger seat, and is made of tubes bent to shape. On to these all other parts are welded, thus forming a whole with joints, the loosening of which is out of question.

Loading tests have shown that the body, even without diagonal bracing, is sufficiently strong for all purposes, so that any breaking of the bracing (which is, nevertheless, put in) does not endanger the safety of the machine.

According to the strain on them and the resistance to the air, the steel tubes used are round, egg-shaped, elliptic or oval pointed in three different strengths of 3 mm. The most important bearing or holding parts are welded together and then bound so that they are sufficiently solid for any eventuality.

The body is built in the most advantageous fish-shape, sectionally right-angled and braced diagonally. The body-work, with cowls, protects the pilot as well as the passenger from cold, rain or hail. The radiator is underneath the body and is protected between the two stays of the front frame.

The greatest attention has been given to the landing apparatus, which is strong but elegant in its lines, and has been tested on a great number of steel-tube machines in many cross-country races. Without bracing of wires or cables it offers an exceedingly strong foundation for fixing the wings. Double spiral compression springs absorb landing shocks by a compression of 21 cm. The wheels, built together in pairs with double tyres, cannot sink into soft soil on landing on account of their width. In cases of the wheels giving way a skid running through the middle touches the ground, and stops any further breakage of the landing gear.

All carrying surfaces are constructed with the greatest care, and after the most thorough loading tests. The curve used gives surprisingly advantageous results, lifts well, and gives a good gliding angle.

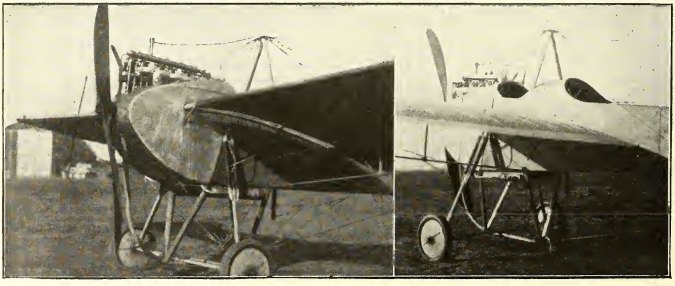
The Jeannin machine fulfils the new German military requirements, rising after a run of 70 m., reaching 800 m. in 13 mins., and on landing needs only a run of 60 m. before stopping. The controls are on hinges and can be folded down if the wires are loosened on one side, and these need only be fastened afresh for the machine to be ready to fly. The lateral control gear is built in, but the gear for steering and elevating is detachable, leaving the machine 7 m. long ready for transport.

Eiffel in English.

Messrs. Constable have ready for immediate publication a book entitled "Air Resistance and Aviation," from the French of M. G. Eiffel. A very large number of diagrams and plates, several photographs, and the numerous tables compiled by M. Eiffel are included in this authoritative book. The translation is the work of Mr. J. C. Hunsaker, of the U.S. Navy Yard, Boston, himself an authority on aviation in the U.S.A., and the volume should be of great value to scientific students of aviation.

The Graphic N.O.

The latest description of the Borel hydro-monoplane—by a sailorman, needless to say—is "a bird with sea-boots on," which strikes one as rather apt.



Two views of the Jeannin monoplane.

Questions in the House.

Oral Answers, April 30th, 1913.

Aircraft.

Royal Flying Corps (Junior Mechanics).

4. Mr. Joynson-Hicks asked the First Lord of the Admiralty what is the exact amount of pay to naval junior mechanics in the Royal Flying Corps and to those naval junior mechanics not so employed; and what, calculated on this basis, is the amount of danger pay which the former receive.

Dr. Macnamara: Junior mechanics in the Royal Flying Corps receive pay at the following rates:—

First-class mechanic ... ... 4s. a day
Second-class mechanic ... ... 2s. a day

together with flying pay of 4s. or 2s. a day if qualified as fliers. If they are not so qualified, they receive only the pay of 4s. or 2s. a day, according to their class in the corps. These mechanics are drawn from various classes in the Navy, where their pay may have ranged from 1s. 8d. to 2s. 10d. a day. For instance, a carpenter's crew in the Navy, with pay of 2s. 6d. a day, is graded as first-class mechanic at 4s. a day. The actual addition on joining the Royal Flying Corps to the pay received while in the Navy is not, therefore, the same in all cases. But in every case the rate is on a scale higher than would be received by the individual in the Royal Navy, the Royal Flying Corps rates of pay being intended to cover the risk involved in being occasionally taken up as passengers in aeroplanes.

Sir. C. Kinloch-Cooke: Do I understand the right hon. gentleman to say that the pay of carpenter's crews has been raised?

Dr. Macnamara: Oh, no, no; I gave the hon. member an illustration showing how the Royal Flying Corps is on a scale higher in the Navy.

Airships under Construction.

7. Mr. Burgoyne asked how many airships are under construction or have been ordered for the British Navy; what are their types; and do they belong to the rigid, semi-rigid, or non-rigid category.

Mr. Churchill: Two non-rigid have been ordered and are almost completed; one has carried out successful preliminary flights. A joint naval and military non-rigid airship is also under construction. This vessel is for training purposes.

Mr. Hunt: Would the right hon. gentleman say what is the size of these airships and when the contractors are bound to deliver them?

Mr. Churchill: I think I could give that information, or a good part of it, if notice were given.

Mr. Frederick Hall (Dulwich): What will be the speed of these two airships?

Mr. Churchill: The speed will be considerable, but I should not like to say without inquiry whether or not I ought to give it.

Aeroplanes and Hydro-Aeroplanes for British Navy.

8. Mr. Burgoyne asked how many aeroplanes and hydro-aeroplanes, respectively, are complete, building, or on order for the British Navy.

Mr. Churchill: I do not wish to add anything at present to my statement in presenting the Navy Estimates.

Zeppelin Airships.

24. Mr. King asked the Secretary of State for War whether he is aware that, of the sixteen Zeppelin airships that have been built in Germany, only six remain, the rest having already proved obsolete, useless, or disastrous; and whether he will continue to resist the appeal made to him to build or buy airships similar to those which in other countries have been found far from satisfactory.

Mr. Churchill: My right hon. friend has asked me to answer this question. The statement that of sixteen Zeppelin airships built in Germany only six remain is correct. There is no intention of building or buying airships of types that have proved unsatisfactory in other countries.

Airships (Landing in Foreign Countries).

25. Mr. King asked the Secretary of State for War whether he was aware that a German airship was recently driven out of its course and forced to alight on a French champ de Mars, and that before this airship was released, drawings, photographs, and descriptions were taken of five inventions hitherto held to be the exclusive property of the German Government, and of which specifications were treated as military secrets; and whether he can state that due care will be taken to prevent British aircraft from alighting on foreign drill-grounds, and being thus exposed to the scrutiny of foreign military authorities.

The Secretary of State for War (Colonel Seely): The replies to the first and third parts of the question are in the affirmative. As regards the second part of the question, I have no information to give.

Volunteer Flying Corps.

27. Mr. Burgoyne asked what steps are being taken in regard to the offer of Messrs. Cain, of Liverpool, of two fully-equipped aeroplanes; whether he is prepared to countenance the formation of a Volunteer Flying Corps; and if he will consider the possibility of asking the donors above mentioned to apply the gift to the furtherance of aviation in some other direction in the event of the present offer being unacceptable.

Colonel Seely: This matter is now under consideration, and a reply will be sent in a few days, a copy of which I will send to the hon. gentleman. The reply to the last part of the question is in the affirmative.

Flying Instruction (Special Reserve Officers).

28 and 29. Mr. Hunt asked (1) whether it has yet been found possible to give Special Reserve officers pay during instruction in flying; and (2) whether, as officers have to provide their own lodging and outfit for instruction in flying, he can now say whether anything can be allowed towards these expenses if an officer is prevented by illness or accident from obtaining a certificate.

Colonel Seely: I recognise that there may be cases in which the present regulations operate hardly upon individuals, and I am considering whether some means of obviating this can be found.

Clement-Bayard Airship.

31, 32 and 33. Mr. King asked the Secretary of State for War (1) the names of the members of the Parliamentary Aerial Defence Committee who induced the War Office to purchase for £18,000, part of which sum was contributed by wealthy patriotic persons, the Clement-Bayard airship which has lately been dismantled; (2) whether, when the Clement-Bayard airship was dismantled, any of the parts were sold; if so, what sum was realised; if not, what value has been obtained for an airship which in 1910 was considered cheap at £18,000; and (3) whether he is aware that the Clement-Bayard airship purchased in October, 1910, was stated by its owner to have cost over £30,000 originally, but was soon after sold by him for £18,000; that this airship was declared by the Parliamentary Aerial Defence Committee to have proved her worth for military operations, but has proved of no military value whatsoever; and whether he will now publish all the correspondence about this airship which passed prior and subsequent to the purchase.

Colonel Seely: There is no official record of the names of the Committee mentioned, of which the hon. and gallant member for the Farcham Division was chairman. No parts of the airship have as yet been sold. The engines are still available and are at the Aircraft Factory. As regards Question 33, the reply to the first part is in the affirmative; and as regards the second part, no such definite statement by the Committee can be traced. As regards the last part of the question, the reply is in the negative.

Mr. Pike Pease: May I ask the right hon. gentleman if he thinks that the action of the War Office in regard to this airship was justified? If the airship was fit for service, why was it not used, and if it was not fit for service, why was it purchased?

Colonel Seely: I think part of the last two supplementary questions is answered in some of the replies I have just given. Of course, it is the fact that the envelope of this balloon leaked so badly that it would have been very costly to have inflated it. No doubt mistakes were made on both sides, by hon. gentle-

men on both sides of the House, as well as by my department, but we have not made half as many mistakes in this matter as our neighbours.

Mr. Pike Pease: Was not the leakage known to the War Office before the ship was purchased?

Colonel Seely: It was before my time. There was a strong Committee of this House engaged in these transactions, and I understand they thought the airship was serviceable, and I suppose we thought it was when it was taken over. Mistakes must be made in a new matter of this kind. We have not made very many mistakes of a large kind in the matter of airships. We have been signally successful.

Royal Flying Corps (Indian Officers).

35. Sir J. D. Rees asked the Under Secretary of State for India whether the provision of £15,500 and £4,100 for forming a school of aeronautics and for aviation buildings, respectively, represents all that is to be done in India in 1913-14 in respect of military aviation; whether officers of native regiments when on leave in England will be under some official disability which prevents them from being appointed to the Royal Flying Corps; whether officers of British regiments serving in India can only join such corps on less favourable pecuniary terms than their brother-officers serving in regiments at home; whether an officer who was attached for a short period to the late air battalion has been appointed adviser on aviation to the Indian General Staff; why officers serving in India, which offers superior physical conditions for airship and aeroplane practice to those obtaining in these islands, are not encouraged to perfect themselves in the art of aviation by being allowed to join the Royal Flying Corps on favourable terms; and whether the Secretary of State in Council will advise the Governor-General in Council that the provisions made in the Budget and the conditions under which officers serving in India can learn the art of aviation are wholly inadequate to the importance this branch of warfare has attained.

The Under-Secretary for India (Mr. Montagu): The Government of India intend to have their own school of military aviation, and have provided the sums mentioned by the hon. member to meet preliminary charges in the present year. The scheme will be under an officer trained in the Home air battalion here, and the future staff of instructors will be similarly trained at the cost of Indian revenues. In view of the facilities which will shortly exist in India, it is not considered necessary to assist from Indian revenues officers of the Indian Army to learn flying in this country, or to accept charges on account of the training here of officers of British regiments stationed in India. The Secretary of State has no reason to suppose that these arrangements will prove inadequate.

Mr. Joynson-Hicks: Can the hon. gentleman fill in the answer with a date or two; when is it going to take place?

Mr. Montagu: I am afraid I could not do so without referring once again to the papers. I will let him know.

Written Answers, April 30th, 1913.

Airships and Aeroplanes.

Mr. Nuttall asked the names of the principal manufacturers of airships and aeroplanes in the United Kingdom.

Colonel Seely: About twenty firms are noted upon the War Office list, but as the lists of firms to be invited to tender for Army requirements are invariably treated as confidential, in this, as in other cases, I am unable to give the names.

Written Answers, May 1st, 1913.

Aircraft.

Naval and Military Machines.

Mr. Morrell asked the Secretary of State for War what is the total number of officers and men engaged in aviation or in the construction of flying machines; and what number have been killed or injured.

Colonel Seely: In the Military Wing of the Royal Flying Corps and at the Central Flying School there are at present 83 officers and 602 other ranks engaged in aviation, including five naval and marine officers and twenty-three naval ratings employed at the school. All this personnel is to some extent employed on the repair of machines, but not in construction. There are also twenty-four officers in the Reserve. Six officers and one non-commissioned officer have been killed while flying, and two officers and one man have been injured but have recovered. There have been, in addition, a few minor accidents in connection with motor-driving and the workshops.

The Royal Aero Club.

At the committee meeting on April 29th, on the motion of Mr. R. W. Wallace, K.C., seconded by Mr. M. O'Gorman, the Marquess of Tullibardine, M.V.O., D.S.O., M.P., was unanimously elected chairman of the Club; and on the motion of Mr. R. W. Wallace, K.C., seconded by Prof. A. K. Huntington, Col. H. C. L. Holden, C.B., F.R.S., was unanimously elected vice-chairman of the Club.

The following sub-committees were appointed for the year, subject to rule 22:—

Competitions Committee.—F. P. Armstrong, Ernest C. Bucknall, G. B. Cockburn, Capt. A. E. Davidson, R.E., Col. H. C. L. Holden, C.B., F.R.S., Prof. A. K. Huntington, Major F. Lindsay Lloyd, J. T. C. Moore-Brabazon, N. C. Neill, Alec Ogilvie, Mervyn O'Gorman, E. V. Sassoon, A. Mortimer Singer.

Technical Committee.—Prof. J. H. Biles, Col. J. E. Capper, C.B., R.E., G. B. Cockburn, Capt. F. Creagh-Osborne, R.N., Alexander Duckham, Major J. D. B. Fulton, R.F.A., Col. H. C. L. Holden, C.B., F.R.S., Prof. A. K. Huntington, Major F. Lindsay Lloyd, Alec Ogilvie, Mervyn O'Gorman, Com. C. R. Samson, R.N.

Foreign Relations Committee.—Griffith Brewer, Capt. Bertram Dickson, Sir Henry Norman, M.P., Mervyn O'Gorman, Roger W. Wallace, K.C.

House Committee.—Ernest C. Bucknall, C. G. Grunhold, N. C. Neill, C. F. Pollock, E. V. Sassoon.

Grounds Inspection Committee.—S. a'Court, Ernest C. Bucknall, G. B. Cockburn, F. K. McClean, J. T. C. Moore-Brabazon, N. C. Neill, Alec Ogilvie, T. O. M. Sopwith.

Legislation Committee.—Ernest C. Bucknall, Alan H. Burgoyne, M.P., A. du Cros, M.P., J. Norton Griffiths, M.P., W. Joynson-Hicks, M.P., Arthur Lee, M.P., G. A. Lloyd, M.P., Sir A. Mond, M.P., Sir Henry Norman, M.P., C. F. Pollock, Lionel N. Rothschild, M.P., G. J. Sandys, M.P., Hon. Arthur Stanley, M.V.O., M.P., Roger W. Wallace, K.C.

Club Ground Committee.—Ernest C. Bucknall, J. W. Dunne, Hon. Maurice Egerton, Prof. A. K. Huntington, F. K. McClean, Alec Ogilvie, Commander C. R. Samson, R.N., Staff-Surgeon Hardy Vesey Wells, R.N.

Balloon Committee.—Griffith Brewer, John D. Dunville, Philip Gardner, Dr. W. J. S. Lockyer, J. T. C. Moore-Brabazon, C. F. Pollock, A. Mortimer Singer, Roger W. Wallace, K.C.

Publicity Committee.—R. Wherry Anderson, Prof. A. K. Huntington, Stanley Spooner.

Library Committee.—C. G. Grey, T. O'B. Hubbard, Prof. A. K. Huntington, Stanley Spooner.

Public Safety and Accidents Investigation Committee.—A. E. Berriman, Engineer-Lieut. E. F. Briggs, R.N., G.B. Cockburn, Major J. D. B. Fulton, R.F.A., Col. H. C. L. Holden, C.B., F.R.S., J. H. Ledeboer, F. K. McClean, W. O. Manning, Alec Ogilvie, Mervyn O'Gorman, Maj.-Gen. R. M. Ruck, C.B., R.E., Com. C. R. Samson, R.N., Staff-Surgeon Hardy Vesey Wells, R.N.

The chairman of the Club, the Marquess of Tullibardine, M.V.O., D.S.O., M.P., and the vice-chairman, Col. H. C. L. Holden, C.B., F.R.S., are ex-officio members of all committees.

The following timekeepers were appointed for the coming year:—F. T. Bidlake, J. H. Burley, A. Deacon, T. D. Dutton, A. V. Ebblewhite, A. Fattorini, C. P. Glazebrook, H. Hewitt Griffin, J. B. Hyland, James M. Inglis, A. G. Reynolds, J. E. Rhodes, Z. Wheatley.

British Empire Michelin Cup No. 1.—It was decided that all competitors for this competition should make a flight of one hour's duration at the aerodrome from which the start is made before commencing the cross-country flight. The flight at the aerodrome is to form part of the competition, and the competitor will be signalled at the expiration of the hour to proceed on the cross-country course, as laid down in the conditions.

The Mansion House Meeting.

The meeting, on May 5th, in support of an adequate programme for aerial defence, convened by the Lord Mayor of London with the aid of the Aerial Defence Committee of the Navy League, has been reported at such length in the daily Press that there is no need for this paper to do more than place the resolutions on record. The speeches were, as a whole, excellent, but, being intended for consumption by the general public, they would convey no fresh information to our readers.

In Mansion House Meetings it is the platform and not the audience that counts. By the names of those supporting the resolutions by their presence on the platform one can gauge the importance of the meeting. The busy City magnate cannot spare time to sit and listen to speeches, he reads them next day in his newspaper, and leaves it to his fellows on the platform to represent his views. On this hypothesis the meeting may be reckoned a decided success. Apart from such well-tried supporters of aeronautical progress as the Duke of Argyll, and Admiral Sir Edward Seymour, the City proper was represented by important officials of Lloyds, the London Chamber of Commerce, and Trinity House.

The Lord Mayor presided, and was attended by the sheriffs. Among those present with him on the platform were the Duke of Argyll, the Marquess of Salisbury, the Earl of Leicester, the Earl of Kinnoull, Viscount Midleton, Lord Blyth, Lord Desborough, Lord Kinnaird, Lord Lamington, Lord Montagu, Lord St. Audries, Lord Willoughby de Broke, Admiral of the Fleet Sir E. Seymour, Admiral Sir E. R. Fremantle, Admiral Sir John Hopkins, Admiral Adair, General Arbuthnot, Sir E. Beauchamp, M.P., Sir Algernon Firth, Sir Henry Cunningham, the Lord Mayor of Belfast, Sir H. Kimber, M.P., Mr. A. Burgoyne, M.P., Captain W. V. Faber, M.P., Mr. W. W. Ashley, M.P., Captain H. Acton Blake, Captain Erich von Muller, German Naval Attaché, Captain H. de Roin, Russian Naval Attaché, and the Dowager Lady O'Hagan and Mrs. Watt Smyth, representing the Women's Aerial League.

The "Daily Mail," commenting on the comparatively small attendance, suggests that if speakers with more intimate connection with aviation had been present the City would have turned out in larger numbers to hear them. That may be so, but it has evidently been forgotten that this was not an occasion for a lecture on aeronautics, but one on which people who know little of the new science stood up to express their realisation of its importance to the nation. The speakers were not there to convince an audience but to give voice to the convictions of the class each of them represented.

The resolutions, which were carried unanimously, were as follows:—

First Resolution—"In the opinion of this non-political and non-party meeting of the citizens of London, aerial supremacy has now become so important a factor in warfare as to render it absolutely necessary that Great Britain should forthwith take the necessary steps to achieve complete security against attack in the air." Proposed by Admiral of the Fleet the Right Hon. Sir Edward Seymour, G.C.B., G.C.V.O., O.M. Seconded by Admiral Sir John Hopkins, G.C.B.

Second Resolution—"In view of the rapid development of aircraft for defence and the large sums provided by foreign Government for the construction of airships, aeroplanes and auxiliary equipment, the time has come when this country must undertake such measures of preparation as will tend at the earliest possible moment to give Great Britain an ample margin of air supremacy in airships and aeroplanes as against the next strongest naval power." Proposed by His Grace the Duke of Argyll, K.G., K.T., G.C.M.G., G.C.V.O. Seconded by the Right Hon. Lord Kinnaird.

Third Resolution—"That copies of the above resolutions be forwarded to His Majesty's Government with the request that these may receive their favourable consideration, and with the assurance that any steps they may take in the directions indicated will receive the warm approval of the citizens." Proposed by Sir Edward Beauchamp, Bart., M.P. (Chairman of Lloyds). Seconded by the Right Hon. the Lord Mayor of Belfast, R. J. McMordie, Esq., M.P., and supported by Lord Desborough.

Fourth Resolution—"That in the opinion of this meeting the formation of a National Aeronautical Defence Association to arouse and educate public opinion on the questions affecting the Aerial Defence of the Country should be inaugurated and that this Committee should be entirely non-party in character—and, that the Lord Mayor, for the time being, be invited to preside over this Committee and appoint Trustees who will administer such funds as are raised with the co-operation of approved organisations for its economical and proper expenditure." Proposed by Stanley Machin, Esq. (Vice-President, London Chamber of Commerce). Seconded by Captain H. Acton Blake (Deputy Master of Trinity House).

Fifth Resolution—Vote of thanks to the Lord Mayor. Proposed by the Most Noble The Marquess of Salisbury, G.C.V.O. Seconded by Ernest Kennedy, Esq. (one of the Managers of the Stock Exchange).

The Government Press on Aerial Defence.

"The Star" for May 5th has quite a clever skit on the efforts of some few of us to stir up public interest in aerial defence. The humour of it is too good to be confined to followers of the Government. The "Star's" effort runs as follows:—

AIRSHIPS AND SCARESHIPS UNLIMITED.
CAPITAL HELD BY THE SELECT FEW.

Directors: A number of highly influential Naval and Military Officers, and officials of the Admiralty and War Office have intimated their willingness to accept directorships of the company if the prospects are made good enough. The promotors have no anxiety on this score.

The Syndicate has been formed (inter alia) for the purpose of promoting a company which will be able to reap the enormous profits to be made by contracting with the Government for the supply of Airships at least twice as large and five times more expensive than those possessed by any other Power.

The Promotors have expended large sums in organising Airship scares in various parts of the country, while certain organs of the Press, who are in sympathy (for definite reasons) with the objects of the company, have been induced (for considerations) to publish paragraphs concerning many others which have not occurred, with equal efficacy.

The Public mind therefore has been fully prepared, and is ready to take up the cry of "Two Gas-bags for one" with the blind faith with which it shouted for "More Dreadnoughts," with which agitation the Promotors of the proposed company were closely identified.

It is estimated that nine out of every ten airships will be broken up within a week of their being handed over to the Government, so that as soon as the two-to-one rule is adopted a perpetual flow of orders is assured. The company runs no risk, as the airships are not allowed to be moved from the shed until the Official Blockhead has duly accepted delivery. By securing the services of late Government and Army officials the company is assured of good "treatment" at the Admiralty and War Office and need not fear competition, as no orders will be given out to other firms.

The profit per airship, needless to say, will be very high, but the promoters (for reasons of public policy) do not wish to commit themselves to a definite figure. The promoters are not taking into account the possible profits to be gained from selling airships to foreign countries, although they may have been ordered by the British Government. Every airship sold abroad, however, means two more orders at home. The possibilities of this business are enormous, and special agents will be employed abroad to further the company's objects in this matter.

One of the sympathetic organs of the Press has kindly promised to supply all the gas required. It has immense quantities ready at a moment's notice, and any kind can be turned on to suit any contingency.

Presumably "The Star," being in such close touch with the manners and customs of the present Government, is an authority on matters "arranged" in this way.

The Accident to the Cody Biplane.

The breakage in the Cody biplane which cost the life of Lieut. Rogers-Harrison belongs to that class of accident which suggests numerous possible causes, although the prime cause itself can probably never be known. One fact, however, seems to stand out clearly on the evidence of Mr. Cody himself, namely, that the machine was descending steeply with the engine running and that the elevators collapsed. Whether they collapsed under the actual flying strain or at a moment when the pilot pulled the lever back, cannot, of course, be determined, but the latter seems to be the more likely moment at which the collapse would occur.

Without in any way prejudging the verdict of the Accidents Committee of the Royal Aero Club, it may be well to consider some of the circumstances attendant on flying this type of machine. It must be remembered that the Cody machine is in essence what is commonly known as of the "tail-first" type and so is of the same species as the early Wrights, the original Santos Dumont, the Valkyrie, and the Voisin "Canard," but distinct from other machines with front elevators, or deflectors, such as the M. Farman, "S.38" Short, the Curtiss, and their forerunners the "box-kite" biplanes. In the original Wrights also the load was carried entirely on the main planes and the front elevators were purely directional deflectors, but there was no tail to act as a "damper."

In the later type Wrights and in the "tail-first" machines mentioned above, the leading planes carried a definite proportion of the load of the machine so that the centre of pressure and centre of gravity of the machine were actually in front of the leading edge of the main plane. This naturally means that the leading planes have in this type the double work of carrying a load and of controlling the attitude of the machine. In the more modern type of aeroplane which is controlled by an elevator flap attached to the tail, the tail may or may not carry part of the load, and the flap, or the warping portion of the tail which is used in some machines, is simply a deflector. Also in all machines controlled at the tail, the strains put upon the various parts are to a great extent tension strains, whereas in the tail-first type the chief organs are either in compression or under a bending strain.

One has only to conjure up a mental vision of the two types of machines to see at once the possibilities in the way of the strains set up. Take for example the case of a tractor biplane diving absolutely vertically in which the elevator flaps are suddenly pulled to a position at right angles to the fuselage of the machine. Practically everything is then in tension except the hinges of the flaps, which are in shear. Naturally, if the machine were travelling fast enough there would be a danger of either splitting the fabric or of pulling the hinges apart, but the strain on the machine as a whole would not come on as a direct shock, and it must be remembered that the main tail plane itself remains absolutely in its usual position to the rest of the machine.

Now, consider the case of a tail-first machine in which the same thing is done. In the case of the Valkyrie there was, as well as an elevator, a fixed leading plane, which did not move, and so acted as a damper, but in the Cody the two big elevator planes move in their entirety. If the machine is diving vertically and those planes are suddenly pulled as nearly as possible at right angles to the normally horizontal line of the machine, it practically means that the whole weight of the machine is standing on the elevators for the time being, and is being supported on the elevator booms and connections

In connection with this it is necessary to remember that every cambered plane has one particular position at which it exerts a bigger lift than in any other; that is to say, that at its angle of maximum lift it will exert more pressure than if turned actually at right angles to the air through which it is moving. Now in the case of a tail-first machine with cambered planes that angle of maximum lift can be reached without the machine attaining anything like a vertical position. If one drives a machine of this type forward at a high speed, the tendency of the elevators will be to make it climb, therefore, their angle must be decreased If one decreases the angle still further in order to bring the machine into a descending position the angle of the elevators will decrease more and more as the machine accelerates, so that one would quickly reach a very high speed on a fairly steep downward path with the elevators practically at a neutral or even at a negative angle. If they were then brought back with anything like a sudden jerk, as they can be when they are balanced along their normal centre of pressure as in a Cody, the angle of maximum load would be reached in almost a fraction of a second, and before the machine as a whole had time to respond to the action of the elevators as they approached that angle, and, as a result, the greatest possible load which the elevators could take would be thrown on to them almost as if it had been put on with a sudden shock. And remember that "could take" in this case does not mean "without breaking," but that they are "full of load" as a vessel may be full of liquid, and will not hold any more, the rest of the air simply spilling over the edges.

Now when one takes into consideration the weight and speed of the Cody machine and the size of those elevators it must be fairly evident that they will contain a load quite as great as the load on the total wing surface of an ordinary single-seated Blériot, and one at once begins to doubt whether the bamboo struts in compression would stand such a load, or whether the attachments of the elevator spars, or even the construction of the elevators themselves would hold up to such a load.

I am told that pilots who have attempted to fly the Cody machine find it very "tender" fore and aft as compared with other machines they have flown, and this is not at all surprising, because there is no damping surface anywhere except the small horizontal surfaces at the tail, while the fact that the angle of the whole surface of the loaded front planes is varied makes the machine more "tender" than if only a portion of the front planes were moved. Consequently, in any machine of this type it must necessarily be much more easy to approach a dangerous angle than it is in a machine controlled and damped in the ordinary way. That does not necessarily mean that the machine is inherently dangerous, for if one exceeds any limit on any machine one is bound to come to grief, but it does mean that if one makes a mistake on a machine of this type there is less time in which to correct it.

Those who have seen Mr. Cody fly most will remember that although he often goes up at an exceedingly steep angle, he rarely descends steeply, and he never flattens out suddenly after descending. In fact, one may say with perfect fairness to everybody concerned that the present type of Cody machine is safe in the hands of a pilot who has had sufficient experience of it. It is a machine to which one should serve a long apprenticeship on others of lower power, and it must be remembered that Mr. Cody himself has attained his present command of his machine only after having worked up to the present power through smaller engines which were barely able to make the machine fly at all.

It is, of course, quite possible that the force of the propeller slip-stream may have blown one of the rudders to pieces much as happened to Mr. Cody himself some months ago, and that the machine may have got out of control and have broken as Mr. Harrison was bringing it back again; and, of course, it is also possible that something else may have broken, under a comparatively normal strain, and so have started the dive which resulted in the breaking of the elevators, but on the face of it one cannot help thinking that this is another case where an accident has occurred through allowing an officer to fly a machine of high power without working up to it gradually.

There are many that think that Captain Hamilton and his passenger, Mr. Wyness-Stuart, might not have been killed had he had more experience of using very high-powered engines, and the accident in which Lieut. Wanklyn smashed up a new high-powered Bréguet, happily without serious injury to himself, is another example of the evils of allowing any pilot to take control of a high-powered machine without

working up through a proper system of gradation from the slow and low-powered machines on which he has served his apprenticeship.

It is not sufficient to put a man who has only done "certificate" flights onto a high-powered machine to be trained for a while by a more skilled pilot. He must actually work up from one power and speed to higher power and speed by his own personal experience.—C. G. G.

A Warning to Pilots.

There are at present a number of men flying who, good pilots as they are, have not yet had experience of cross-country work in warm weather, and it may be well to warn them to be on the look out for very treacherous conditions just at present. Saturday last was a moderate sample of what to expect. The wind was not strong, but it was very gusty, and the warm air sweeping over the cold damp ground set up eddies which made even so experienced a pilot as Mr. Hamel admit that he had had an "awful bumping" on his trip to Windsor and back. We have not yet had enough dry weather to get the winter wet out of the land, and if a heat-wave comes, as is promised, pilots must look our for squalls when flying across country. Every change in the quality of the ground over which one passes, say from tilled ground to grass, or heather, or marsh, or rocky hills, means a difference in the air. This is particularly noticeable over woods, or in crossing rivers, where there is always a downward drop. Therefore, do not fly across country except on a machine which you know intimately, which has plenty of power to spare, and on which you have had plenty of practice. And then, go about it warily till you know fairly well what to expect from the look of the land you are approaching.

An Examination Paper.

The following examination paper was set on April 18th at the Polytechnic, 309, Regent Street, W., in the annual examination in aerodynamics, and in the mechanics of aeroplane construction, the examiner being Mr. L. Blin Desbleds. One wonders how many of the people who merely build machines which fly for a day or so at 70 miles an hour know all these things:—

1. A Blériot monoplane, having a wing area of 160 sq. feet can lift a weight of 660 lbs. when flying at a certain inclination at a speed of 45 miles per hour. What is the "lift-coefficient" of the Blériot wing at that inclination?

2. Calculate the "drift-coefficient" of a plane surface greater than 1 sq. metre, having an "aspect-ratio"=6 and moving broadside on at an inclination of 5°. Express the answer in the British system of units.

3. What is understood by (i.) coefficient of enlargement; (ii.) angle of retrogradation, and explain their importance in aerodynamics?

4. A monoplane has a wing area equal to 20 sq. metres and is to fly at an inclination of 7°. What is the h.p. of the motor with which it must be provided so that it may travel at 72 kilometres per hour? Drift coefficient of wing at 7°=0.005; surface equivalent to passive resistances =0.9 sq. metre; efficiency of propelling plant 65 per cent.

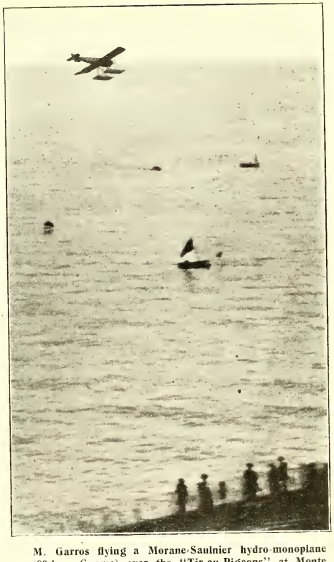
5. Explain why flying is made safer by providing an aeroplane with a motor capable of developing a greater power than that which is strictly needed.

6. Say in what general manner the lift of an aeroplane wing varies as the inclination of the wing increases from 0° to 90°, and explain how a knowledge of the variation of the lift with the inclination is made use of in order to increase the automatic longitudinal stability of aeroplanes.

7. Define (i.) the "real speed" of an aeroplane; (ii.) its "apparent speed." Find an expression giving the relation between the "real speed" of an aircraft and its "average speed" over a straight closed circuit.

8. What are the principal experimental results obtained by Eiffel relating to the pressure which the air exerts on two parallel surfaces (i.) when the surfaces move normally; (ii.) when the surfaces move at an inclination α to the horizon.

9. What qualities should aeroplane chassis possess? Why should the axle of the chassis-wheels of an aeroplane be a little in front of the C.G. of the machine?



M. Garros flying a Morane-Saulnier hydro-monoplane (80-h.p. Gnome) over the "Tir-au-Pigeons" at Monte Carlo during the recent hydro-aeroplane meeting.

10. Why is it wrong to base the calculation of the strength of an aeroplane wing on the load carried per unit of surface?

11. Describe a common method of constructing aerial propellers mentioning the materials most usually employed for that purpose.

12. An aeroplane weighing, with pilot, etc., 750 lbs. lands at an inclination of 30° at a speed of 50 miles per hour. Find the work that must be absorbed by the chassis shock-absorbers, etc.

13. What are "drift-wires"? Explain their use in monoplanes and in biplanes.

14. Describe fully the construction of (i.) a Blériot wing; (ii.) a Blériot fuselage.

15. What qualities should aeroplane wing fabrics possess? Why, in the case of double-surfaced wings, should the fabric be very strongly fixed on the upper portion of the wing?

16. Prove that the thrust given by a propeller of diameter D can be given by N similar propellers of the same diameter turning at a speed $\sqrt{N}$ less, and consuming $\sqrt{N}$ less power than the single propeller.

To Whom it May Concern.

Some of those concerned with aviation may be interested to learn that Mr. "Gray," alias "McCallum More," is again turning his attention to aviation. He appeared at Hendon on Sunday last, and paid cash for two passenger flights, one with M. Verrier and one on the Handley Page machine.

Exhibitions at Hendon.

On Thursday the weather was perfect, the gate was large, and the exhibition was worthy of those conditions. Mr. Cheeseman, on the Grahame-White biplane, was first to go up. After several flights he was seen to make a very abrupt landing on the far side of the aerodrome. A cylinder had blown off, breaking the right-hand tail-booms, damaging the upper plane, and totally eliminating the lower right-hand ailerons. Fortunately the accident occurred at a height of twelve feet or thereabouts, and Mr. Cheeseman came off with a shaking. Mr. Spratt was up for some time in the little 35-h.p. Deperdussin which distinguished itself and its pilots last week.

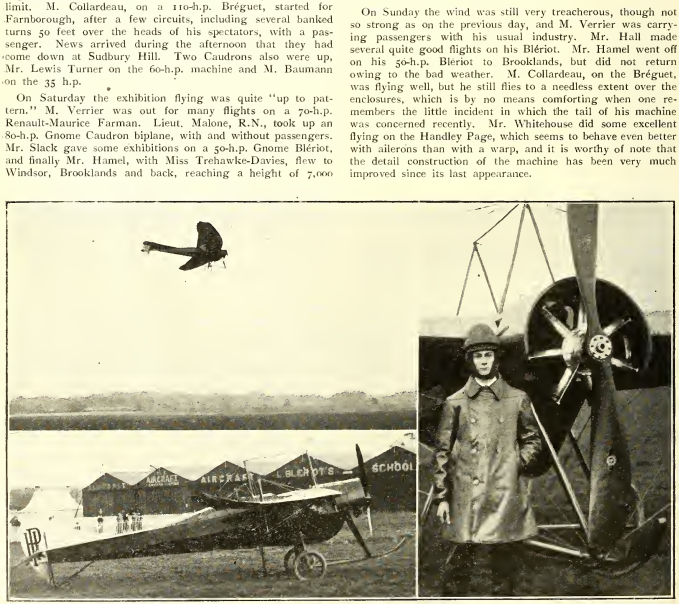
Mr. Whitehouse made his public début as a Handley Page pilot, his first flight of the day lasting three-quarters of an hour; the 50-h.p. Gnome monoplane, which has now been fitted with ailerons, looks exceedingly well in the air, and under Mr. Whitehouse's control flew with remarkable steadiness and absence of "roll," landing beautifully. Mr. Hamel, with Miss Trehawke-Davies, made several flights, during one of which they reached a height of 6,000 ft. Two other Blériots were taking the air, the 45-h.p. Anzani-engined machine of Mr. Temple, and Mr. Hall's 50-h.p. Gnome-engined machine. Some of Mr. Hall's banks approached the limit. M. Collardeau, on a 110-h.p. Bréguet, started for Farnborough, after a few circuits, including several banked turns 50 feet over the heads of his spectators, with a passenger. News arrived during the afternoon that they had come down at Sudbury Hill. Two Caudrons also were up, Mr. Lewis Turner on the 60-h.p. machine and M. Baumann on the 35 h.p.

On Saturday the exhibition flying was quite "up to pattern." M. Verrier was out for many flights on a 70-h.p. Renault-Maurice Farman. Lieut. Malone, R.N., took up an 80-h.p. Gnome Caudron biplane, with and without passengers. Mr. Slack gave some exhibitions on a 50-h.p. Gnome Blériot, and finally Mr. Hamel, with Miss Trehawke-Davies, flew to Windsor, Brooklands and back, reaching a height of 7,000 feet on his way home, where he landed with a typical spiral.

The wind on the ground and at exhibition levels was blowing about 35 m.p.h. in a gusty and treacherous fashion. Mr. Hamel remarked that at 7,000 feet the wind, though stronger —about 50 m.p.h.—was quite steady, while the clouds over his head indicated a still stronger wind above, for they outpaced the Blériot, flying with the wind.

While returning from Hendon on Saturday in Mr. Hamel's Berliet with Mrs. Astley and two other friends, Miss Trehawke-Davies met with a very nasty accident which is likely to lay her up for some time. The car overtook a cyclist, who—as seems to be customary with cyclists on the Edgware Road more than on any other—refused to take his own side of the road, and to avoid running over him the chauffeur was compelled to charge a tram coming in the opposite direction. The three passengers in the rear seat of the car escaped unhurt, but Miss Davies was thrown against the glass screen, breaking her nose and cutting her face badly, one piece of glass only just missing the jugular vein. She bore her injuries with her usual pluck, but is not likely to be out again for some little time. Everyone will wish her a quick and complete recovery. The front of the car was very completely wrecked, but thanks to its weight did not turn over as a lighter car would probably have done.

On Sunday the wind was still very treacherous, though not so strong as on the previous day, and M. Verrier was carrying passengers with his usual industry. Mr. Hall made several quite good flights on his Blériot. Mr. Hamel went off on his 50-h.p. Blériot to Brooklands, but did not return owing to the bad weather. M. Collardeau, on the Bréguet, was flying well, but he still flies to a needless extent over the enclosures, which is by no means comforting when one remembers the little incident in which the tail of his machine was concerned recently. Mr. Whitehouse did some excellent flying on the Handley Page, which seems to behave even better with ailerons than with a warp, and it is worthy of note that the detail construction of the machine has been very much improved since its last appearance.



Three views of the reconstructed Handley Page monoplane (50-h.p. Gnome). In the right photograph is Mr. Whitehouse, who is now flying for Handley Page, Ltd. This machine now has ailerons for lateral control.

The Aerial Menace.

On April 30th, at Kensington Town Hall, Colonel H. S. Massy, C.B., delivered to an excellently-attended meeting of the Women's Aerial League, a lecture on "The Aerial Menace." The lecture was illustrated by an exceedingly fine series of slides, some of them made from the pictures which appeared in the "Review of Reviews," illustrating the horrible things that might happen in this country if war broke out before an adequate aerial fleet was produced. Colonel Massy's method of dealing with the more searing pictures was distinctly neat, for after explaining that as a soldier it was not his place to be a scaremonger, he merely directed a picture to be thrown on the screen and left it to speak for itself, except that he read the distances from Continental airship stations to the English coast and mentioned the speed of well known airships.

Mr. Alan Burgoyne, M.P., who occupied the chair, introduced Colonel Massy, in his usual eloquent and convincing manner, and Lady O'Hagan proposed a vote of thanks to Colonel Massy in one of the most gentlemanly speeches the writer has ever heard. Colonel Massy is to deliver another lecture at the Chelsea Town Hall on May 29th, and any readers of The Aeroplane who can manage to attend are cordially invited to obtain tickets from the Women's Aerial League, Denison House, Vauxhall Bridge Road, S.W.

As to Subscriptions.

A letter which has already appeared in several papers was received at this office last week from the Women's Aerial League requesting that subscriptions to the said League should be sent to the Strand branch of Lloyd's Bank to be placed to the account of the Women's Aerial League. No definite idea is given of the object to which these subscriptions are to be put, beyond the fact that it is stated that the fund is being raised to encourage a more rapid development of the air defences of this country, and to "open up a new industry which is likely to prove an important source of revenue and employment." While in no way wishing to depreciate the excellent intentions of the ladies who have formed the Women's Aerial League, one cannot help feeling that a multiplicity of associations, all more or less with the same object, is a mistake. The Aerial League of Great Britain has already made some attempt to raise enthusiasm in this country, and as the branch of an efficient aerial league the Women's Aerial League might do much good work, but acting entirely on its own account it must surely mean diffusion of energy. It is hoped that the Mansion House meeting will give the start to a really great national movement which will have results as good as those in France, and that the energetic ladies now running the Women's Aerial League will form themselves into an auxiliary of the new body. Now is the opportunity for all the different bodies to join in making a great success.

Whitsun at Hendon.

For the Whitsuntide holidays a most ambitious programme has been arranged at Hendon. On the Saturday there will be a cross-country race, a speed handicap, and an altitude contest for valuable trophies and money prizes. On Whit Sunday the usual Hendon pilots will give special exhibition and passenger-carrying flights. Whit Monday programme will include a cross-country handicap to St. Albans Cathedral and back twice—a distance of 45 miles. For this race the principal prize is the "Giesler" 100-guineas Challenge Cup (second occasion). There will also be a speed handicap around the six-pylon measured course, and a bomb-dropping competition, such as those of last season.

Time was when the follower of aviation had to be of more or less Spartan disposition: he had to stand for hours in the mud, far, far from refreshment, a miserable butt for the rude practical jests of wind and rain. The Hendon government, alive to these disadvantages, have recently erected stands, even in the cheapest enclosures; commodious tea-verandas also are now in action, while a club-house in the half-crown enclosure is rapidly approaching completion.

Progress in Liverpool.

A correspondent in Liverpool says:—"I am writing to let you know about the Liverpool Flying Corps. The minimum age is now fixed at eighteen. The Lord Mayor is going to hold a meeting of business men in the Town Hall on Wednesday, May 7th, re the Flying Corps. The officials of the corps are Messrs. Pugh and Pearson of the Bootle Aero Club. Mr. Melly's school has now started operations again. Mr. Melly and Mr. Birch are continually flying the 50 Gnome side-by-side Blériot of the "Big Bat" type, and the 35 Y Anzani-Blériot. On Wednesday (May 1st) a race was arranged to Freshfield and back, Mr. Birch on the 35 Blériot giving Mr. Melly on the big machine three minutes' start; result, dead-heat. Mr. Birch is a coming star, and Mr. Melly could teach London pilots something."

Brighton-Shoreham Aerodrome.

Although the weather has been far from favourable, there has been flying during the past week. Chief interest centres round the Radley-England waterplane, which was up for a short flight on Thursday, May 1st. It was taken out again in the evening, but Mr. Radley was handicapped by the low tide of the Adur and the consequent mudbanks. Boats towed it a quarter of a mile down the river to a spot below the bridges—a laborious process—but when everything was ready Mr. Radley wisely put off the flight till Friday morning, owing to the crowded state of the river. The machine is still fitted with the three 50-h.p. Gnomes and gets off very fast. The Avro School has been as busy as usual putting in very good work. There is a rumour that Messrs. Radley and England are intending to take over one of the sheds, that the Volks Electric Railway are erecting by the Palace Pier.—E. L. Dower.

The Lesson.

Pilot.	Date.	Machine.	H.P.	Engine.	From	To	Distance. (Kilom.)	Distance. (Miles)	Stopping Places
Guillaux	Apr. 27	Clement Bayard (Mono)	60	Clerget	Biarritz	Kollum	1255	770†	Bordeaux, Villacoublay
Gilbert	Apr 24	Morane-Saulnier	63	Le Rhône	Paris	Salamanca	1040	646	Vittoria.
Daucourt	Apr. 16	Borel (Mono)	50	Gnome	Paris	Berlin	950	590	Liège, Hanover.
Brindejonc desMoulinais	Apr. 29	Morane-Saulnier (Mono)		Gnome	Villacoub'ay	Quakenbrück‡	900	559	Liège
Séguin*	Apr. 26	Farman (Bi)		Gnome	Marseilles	Namur	850	528	Dijon, Mourmelon, Brocire-l'Allaud
Audemars	Apr 26	Morane-Saulnier		Gnome	Paris	Hanover	640	396	Mannheim.
Vedrines	Apr. 30	Morane-Saulnier			Lyon	Rouen	480	298	Nevers, Villacoublay.
Hamel*	Apr 17	Blériot (Mono)	80	Gnome	Dover	Cologne		290‡	
Letort	Apr. 26	Hanriot-Ponnier	50	Le Rhône	Villacoublay	Visé	450	279	
Schemmel	Apr 30	Ruchonnet(Mono)	70	Gnome	Villamée	Nuerbwerg	400	248	Retstore.
Marty	Apr 30	Caudron (Bi)	100	Anzani	Crotoy	Düsseldorf	380	236	Arten.

*With Passenger. ‡Quakenbrük is near Hanover. †Covered about 900 miles. ‡Covered about 350 miles

The lesson taught by the big flights of the past few weeks is shown in graphic form in the frontispiece. The accompanying list gives further details of these performances, which show how far in front the French still are, thanks to the money their manufacturers are able to spend on experiments.

The Week's Work.

MONDAY, April 28th.

R.F.C., Central Flying School.—Moderate south wind, changing to south-west. Gusty, showery. No flying.

R.F.C., Farnborough.—On Maurice Farman 305, Capt. Board 13 mins; Capt. Reynolds 10 mins. On B.E. 206, Major Raleigh 15 mins. On Cody biplane, Lieut. Harrison 13 mins at 500 ft. In attempting to land the machine collapsed, killing the pilot instantly.

R.F.C., Montrose.—Capt. Becke on M. Farman 207 giving tuition to Sergt.-Majors Fletcher and Measures and Sergt. Mullin, Sergt. Mead figures of 8. Later all pilots out on "B.E.s" and M. Farmans. Capt. Becke twice on "B.E." with Capts. Monteith and Cruickshanks.

Hendon.—At Graham-White School, Messrs. W. Birchenough and R. H. Carr circuits on No. 7, with Instructor Manton. Sir Bryan Leighton straights with Instructor Cheeseman. Mr. T. Bayetto straights on No. 2 B.

Brooklands.—At Bristol School, Messrs. Merriam and Bendall testing.

At Vickers School, Mr. Knight on biplane before breakfast, then with Mr. Waterfall and Mr. Wight alternately.

Newcastle (Staffs.).—Mr. Sydney Pickles in 40 m.p.h. gale for 15 mins, having to make considerable distance across country before turning.

TUESDAY, April 29th.

R.F.C., Central Flying School.—Strong, gusty south-east wind. Dull. No flying.

R.F.C., Farnborough.—On Bréguet 210, Major Raleigh 27 mins. On B.E. 201, Capt. Fox 10 mins. On M. Farman 307, Lieut Atkinson 35 mins; Lieut. Gould 10 mins and 25 mins with Capt. Boyer; Lieut. Smith-Barry 12 mins.

R.F.C., Montrose.—Capt. Herbert on M. Farman 207 with Sergt. Aspinall as observer to Barry Camp. Lieut. Lawrence on "B.E." with Sergt. Jillings as observer.

Hendon.—At W. H. Ewen School, Lieut. G. Adams, Mr. Pendlebury and Mr. Prosser rolling and straights, and Lieut. U. C. Hicks rolling on 35-hp. Caudron No. 2 under Mr. Lewis Turner. Mr. Stewart circuits and figures of 8 on 35-h.p. Caudron No. 1. Mr. Zubiaga half circuits.

At Bleriot School, Messrs. Reilly, R. Desoutter and Clappen circuits on No. 3.

At Deperdussin School, Mr. Spratt testing No. 3 repaired engine. Lieut. Bourke, Messrs. Barron, Bauman, Hudson and Phelps straights. Mr. Spratt several circuits in bumpy wind on No. 5.

At Temple School, under Mr. G. L. Temple, 20 mins rolling each, Messrs. Vaile, Ritchie, Penny, Lance, and Lieut. Ambler. Later Mr. G. L. Temple on 45-h.p. Blériot.

At Handley Page School.—Mr. Whitehouse for first time on 50 h.p. Handley Page mono, this being first experience of a Gnome engine. After one straight, he flew six circuits at 600 ft., machine flying steadily and banking nicely. Mr. Fletcher (pupil) taxying and short flights. Machine now fitted with ailerons. Planes being very deep in section, warping tends to strain the fabric; hence ailerons.

Brooklands.—At Howard Flanders School, Mr. Layzell-Apps rolling, Mr. Dukinfield-Jones straights. Engine trouble, brought machine in to have new holding-down bolts and new piston rings fitted.

At Vickers School.—Mr. Knight on biplane, Mr. Andreas 8's. Mr. Ort Paterson with Mr. Knight; Capt. Wood circuits on biplane. Mr. Knight with Mr. Mitchell (new pupil), Mr. Barnwell on No. 5 mono, and handed over to Mr. Wight and Mr. Waterfall. In forenoon Mr. Barnwell testing No. 8 mono with passenger, making several good flights. After experimental alteration to tail, Mr. Barnwell alone on No. 8, had smash on golf links, fortunately without serious injury.

At Bristol School, Mr. Merriam with Lieut. Cogan, Major Merrick, Mr. Grey, and Lieut. Broder, latter pupil alone first time. Lieuts. Hosking, Ed. MacClellan and Cogan, and Mr. Strain figures of eight. After breakfast Lieut. Ed. MacClellan for brevet, but came down as it was too bumpy. Later Lieut. Cogan passed half certificate test. Then Lieut Ed. MacClellan went again, passing half test.

Salisbury Plain (Bristol School.).—Fog first thing. Mr.



Sergeant Bruce, R.F.C., who took his certificate on a Maurice Farman at Lark Hill. He was formerly with Messrs. Radley and Moorhouse at Huntingdon.

Pixton tuition to Lieuts. Brodribb (twice), Chidson, and Newton (prospective pupil), Messrs. Gipps, Marshall, and Delaplane alone. In afternoon Mr. Pixton with Lieut. Burns (prospective pupil). Mr. Busteed on biplane to pick up Lieut. Brodribb, observed walking over plain from camp. Lieuts. Chidson, Marshall and Brodribb alone. Mr. Busteed with pupil on new "Bristol" tractor biplane. Lieut. Marshall alone and Mr. Busteed with Lieut. Vardon, but rain stopped work.

Newcastle (Staffs.).—Mr. Sydney Pickles out alone. Later with Miss Irene Redgrave for 8-mile flight (her first). Then took another passenger. Miss Redgrave so pleased with aerial baptism that she booked through to Wolverhampton (35 miles). This flight made against strong head wind in 50 mins, during trip running through rainstorm lasting 5 mins.

WEDNESDAY, April 30th.

R.F.C., Central Flying School.—Moderate south-west wind, changing to north-west. Heavy thunderstorm during afternoon. On Maurice Farman 411, Lieut. Wanklyn 10 mins alone, with A.M. Savill 7 mins; Major Gerrard 20 mins; Sergt. Stafford 10 mins; A.M. Savill 10 mins. On M. Farman 426, Commander Scarlett, R.N., 14 and 17 mins alone, with Lieut. Shepherd 20 mins. On Short biplane 402, Lieut. Shepherd with Chief Mechanic Pack 10 and 20 mins, with Sergt.-Major Levick 15 mins; Chief Mechanic Pack 40 mins rolling. On B.E. 416, Lieut. Stopford 20 mins, with A.M. Attwood 22 mins.

R.F.C., Farnborough.—On Bréguet 210, Major Raleigh 7 mins; Capt. Shepherd 8 mins; Lieut. Chinnery 5 mins. Capt. Webb-Bowen on B.E. 201 10 mins; Lieut. Smith-Barry 15 mins. On M. Farman 307, Lieut. Atkinson 10 mins with A.M. Storey.

R.F.C., Montrose.—Misty weather. Capt. Longcroft on "B.E." 3 mins.

Hendon.—At Graham-White School, Mr. Major and Sir Bryan Leighton practice. Mr. R. H. Carr under instructor Noel straights. Mr. T. Bayetto circuits, preparing for brevet. Mr. W. Birchenough also out.

At W. H. Ewen School, Mr. L. Turner exhibition flights on 60-h.p. Caudron. Lieut. G. Adams straights on 35-h.p. Caudron. Mr. H. Stewart passed brevet on 35-h.p. Caudron No. 1, flying at an average of 600 ft., and landing close on mark. M. Baumann on 35-h.p. Caudron No. 2.

At Deperdussin School, Lieut. Bourke straights and half turns. Messrs. Bauman, Barron and Hudson straights.

Brooklands.—At Vickers School, Mr. Knight on biplane with Mr. Mitchell, then on No. 5 mono, then handed over to Mr. Waterfall. Mr. Knight on biplane with Mr. Orr Paterson. Mr. Andreas alone.

At Bristol School, Mr. Merriam with Major Merrick. Mr. Bendall testing. Later Mr. Merriam testing. Lieut. Hoskin passed for brevet. Lieut. Cogan passed remaining half. Mr. Strain figures of 8. Lieut. Broder straights.

Liverpool (Waterloo).—Race round Freshfield and back, Mr. Birch on "Y" and Mr. Melly on two-seater. Mr. Birch had trouble in starting his engine and started 5 mins late. On actual time little difference between two machines.

Windermere (Lakes Flying Co.).—Mr. Stanley Adams on "Water Hen" circuits.

Brighton-Shoreham.—Slipway laid to No. 1 hangar, and Radley-England waterplane out between bridges and one of floats found to be leaking badly.

At Avro School, Capt. Schultz flying circuits and Mr. Rolshoven straights.

Salisbury Plain (Bristol School).—Mr. Pixton with Mr. Gipps and Mr. Busteed with pupil. After lunch, Mr. Pixton testing air and Lieut. Chidson alone. Lieuts. Marshall and Chidson passed for certificates, flying well at 300 ft. Lieut. Brodribb alone, and Mr. Busteed took tractor biplane for Admiralty up three times. Mr. Pixton with Mr. Delaplane and latter alone first time, reaching 300 ft.. Mr. Busteed with mechanic on "sociable" mono.

THURSDAY, May 1st.

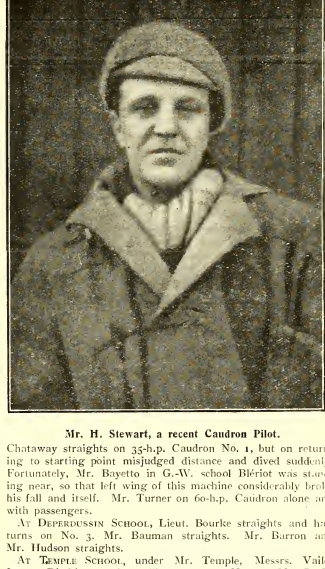
R.F.C., Central Flying School.—Light south-east wind. Sunny and clear. On Maurice Farman 425, Major Trenchard 7, 20 and 35 mins; A.M. Higginbottom 15 mins. On M. Farman 426, Major Gerrard 6 mins alone, with Commander Scarlett 35 mins; Lieut. Shepherd with Commander Scarlett 6 mins; Commdr. Scarlett 44 mins. On Short 402, Lieut. Shepherd with Chief Mech. Pack 35 mins, with Sergt.-Major Levick 25 mins. On B.E. 416, Lieut. Stopford with Lieut. Wanklyn 25 mins, and 15 mins alone; Major Gerrard with Commdr. Scarlett 11 mins.

R.F.C., Farnborough.—On Bréguet 210, Capt. Beor 8 mins; Lieut. Chinnery 57 mins; Lieut. Playfair 15 mins; Sergt. Hunter 9 mins with A.M. Valsey; Capt. Shepherd 11 mins. On "B.E." 201, Major Raleigh 15 mins; Capt. Reynolds 15 mins; Sergt. Bateman 20 mins rolling; Lieut. Waldron 20 mins; Capt. Darbyshire 15 mins; Capt. Fox 5 mins with Lieut. Barrington-Kennett. On M. Farman 307,, Lieut. Hole 5 mins and 35 mins; Lieut. Boyle 10 mins and 20 mins with Lieut. Gould; Lieut. Waldron 20 mins with Lieut. Hily. On M. Farman 305, Lieut. Atkinson 16 mins; Capt. Musgrave 35 mins; Lieut. Holt 50 mins; Lieut. Gould 25 mins with Capt. Board; Lieut. Smith-Barry 15 mins; and Capt. Board 10 mins.

R.F.C., Montrose.—Early morning, Sergt Fletcher and Sergt. Mullin practising on M. Farman 207. Sergt. Mead figures of 8 on M. Farman. Later Capt. Longcroft, Lieut. Lawrence. Lieut. Joubert reconnaissance on "B.E.'s" Lieuts. Martyn, MacLean and Pepper with air mechanics as observers on M. Farmans.

Hendon.—At Graham-White School, Sir Bryan Leighton straights with Instructor Manton. Messrs. Major and R. H. Carr circuits, Mr. Bayetto circuits on No. 2 B.

At W. H. Ewen School, Mr. Turner test on 35-h.p. Caudron No. 1. Lieut. G. Adams, Messrs. Zubiaga and Warren straights and half circuits. M. Baumann test on 35-h.p. Caudron No. 2. Messrs. Prosser, Goodden and Pendlebury straights. Lieut. U. C. Hicks good progress on same. Mr.



Mr. H. Stewart, a recent Caudron Pilot.

Chataway straights on 35-h.p. Caudron No. 1, but on returning to starting point misjudged distance and dived suddenly. Fortunately, Mr. Bayetto in G.-W. school Blériot was standing near, so that left wing of this machine considerably broke his fall and itself. Mr. Turner on 60-h.p. Caudron alone and with passengers.

At Deperdussin School, Lieut. Bourke straights and half turns on No. 3. Mr. Bauman straights. Mr. Barron and Mr. Hudson straights.

At Temple School, under Mr. Temple, Messrs. Vaile, Lance, Ritchie 10 mins rolling on mono No. 2. Mr. G. L. Temple testing 45-h.p. mono.

At Handley Page School, Mr. Whitehouse on 50-h.p. mono took a passenger of 13 stone to Elstree and back.

Brooklands.—At Vickers School, Mr. Knight with Mr. Mitchell, then testing No. 5 and handed over to Mr. Waterfall. Mr. Andreas eights on biplane. Mr. Knight with Messrs. Orr Paterson and Mitchell. Mr. Wight on No. 3 mono straights at 60 ft.

At Bristol School, Mr. Bendall with Major Merrick, Mr. Grey and Lieut. Duncan. Mr. Strain eights at good height.

Windermere (Lakes Flying Co.).—Mr. Bland on "Water Hen" and Mr. Stanley Adams on "Sea Bird."

Liverpool (Waterloo).—Mr. Melly on "Y" mono landed in front of Formby Golf Club-house, some 8 miles away, by invitation. After refreshment returned via Freshfield, where stoppage of lubrication forced landing; trouble soon put right, returned via coast to Waterloo.

Llanelly.—Mr. Pickles' machine assembled by midday. Flying commenced 3.30 p.m. Unfortunately, owing to direction of wind, enormous "gate" (outside) had good view. Mr. Pickles made six flights—three in afternoon and three after tea, including one in dusk, guided by flares, etc. Once landed on sands and several times flew out over sea.

Brighton Shoreham.—Radley-England waterplane below suspension bridge, but owing to defect in propeller further trials postponed.

Salisbury Plain (Bristol School).—Lieut. Brodribb and Mr. Delaplane at 300 ft. Mr. Pixton on new tractor biplane with

Mr. Garnet (new pupil) and then to Fargo on "sociable" mono with Messrs. Garnet and Adams (new pupil). In afternoon Mr. Pixton with Lieut. Burns and Messrs. Adams and Garnet. Lieut. Priestly and Verdon and Mr. Garnet alone. Mr. Busteed with Lieuts. Burns, Priestly, and Verdon, and Mr. Adams for flight each. Mr. Busteed and mechanic testing two "sociable" monos for Roumania.

Foryd, N. Wales.—Mr. Vivian Hewitt 1¾ hrs on re-built Blériot over Rhyl at 2,000 ft; then flew to Mostyn, circling iron works, then to Holywell in rain very fast with wind behind. Rough passage near Prestatyn owing to mountains, but landed safely. The wind treacherous at Foryd suddenly getting up to about 40 m.p.h. from dead calm.

FRIDAY, May 2nd.

R.F.C., Central Flying School.—Light north-west wind. Very foggy all forenoon, clear during afternoon. Lieut. Hubbard arrived in fog on new Avro 433 from Farnborough. On M. Farman 425, Major Trenchard 68 mins, five flights; A.M. Higginbottom 15 mins. On M. Farman 426, Commdr. Scarlett 12 mins. On B.E. 438, Major Gerrard 5 mins alone, with Sergt. Vagg 15 mins, then with two passengers. A.M. Sharp and McDonald 54 mins, setting up new school record by reaching nearly 3,000 metres (9,750 ft.) with two passengers.

R.F.C., Farnborough.—On Bréguet 210, Capt. Shepherd 16 mins; Lieut. Chinnery 25 mins; Lieut. Playfair 12 mins with Lieut. Boyle; Major Raleigh 6 mins with Lieut. Soanes, 7 mins with 1st A.M. Vaisey, 5 mins alone. On "B.E." 201, Capt. Webb-Bowen 40 mins; Major Raleigh 20 mins; Sergt. Bateman 20 mins rolling; A.M. Gerrard 13 mins rolling. On M. Farman 307, Capt. Board 10 mins; Lieut. Gould 25 mins with Lieut. Thomas; Capt. Musgrave 20 mins. On M. Farman 305, Capt. Musgrave 35 mins; Lieut. Atkinson 17 mins with Capt. Board.

R.F.C., Montrose.—Capt. Becke, Capt. Longcroft and Lieuts. Lawrence and Joubert on "B.E.s" Capt. Herbert and Lieuts. Martyn and McLean on M. Farmans. Sergt. Mead took certificate on M. Farman. In evening Capt. Longcroft on "B.E." with Capt. Macdonell and Lieut. Reid. Capt. Tucker on M. Farman. Capt. Becke giving instruction to N.C.O.'s.

Hendon.—At Graham-White School, Mr. Bayetto circuits.

At W. H. Ewen School, Mr. L. Turner test on 35-h.p. Caudron. Lieuts. G. Adams and U. C. Hicks straights. Mr. Zubiaga circuits on 35-h.p. Caudron No. 2. Mr. Turner out alone and with passengers.

At Deperdussin School, Lieut. Bourke straights, right and left turns and first circuit. Messrs. Hudson and Bauman straights and turns. Mr. Barron flew first circuit.

At Blériot School, Mr. Slack tried out No. 4 after alterations and found machine running well. Mr. Desoutter circuits on No. 3 and then figures of 8 and right-hand turns.

At Temple School, under Mr. Temple, Messrs. Penny, Ritchie, Lieut. Ambler, 10 mins each on mono No. 2, G. L. Temple on 45 h.p. mono.

Brooklands.—At Vickers School, Mr. Knight with Mr. Mitchell. Mr. Knight and Mr. Waterfall circuits on No. 5 mono. Mr Andreas on biplane. Messrs. Orr Paterson and Mitchell on biplane with Mr. Knight. Mr. Orr Paterson alone on biplane first time. Mr. Waterfall circuits on No. 5 mono, and Mr. Wight straights on No. 3. In the afternoon same pupils out.

At Bristol School Mr. Merriam with Lieut. Duncan, Major Merrick and Mr. Grey. Lieut. Ed. MacClellan and Mr. Strain alone. About 5.0 p.m. Messrs. Merriam and Bendall testing. Mr. Strain passed certificate tests. Mr. Bendall with Major Merrick and Lieut Duncan. Mr. Merriam with Major Merrick and Mr. Harris (prospective pupil).

Salisbury Plain (Bristol School).—Mr. Gipps alone first time at 150 ft. Lieut. Brodribb and Mr. Delaplane both alone. Mr. Pixton with Mr. Adams. Mr. Busteed with Lieut. Burns and Mr. Garnet. Mr. Busteed later on "sociable" mono with Mr. Garnet. Mr. Pixton on tractor. In evening Mr. Pixton with Messrs. Adams and Garnet and Lieut. Burns. Mr. Busteed put two "sociable" monos through tests with Lieut. Brodribb as passenger. Machines then accepted by Prince Cantacuzène for Roumanian Government. Mr. Pixton with Mr. Delaplane.

Liverpool (Waterloo).—Race around Liverpool and Birkenhead. Mr. Melly started first on two seater, but as Gnome was missing, turned back at Polo Ground to avoid crossing Mersey; up 37 mins. Mr. Birch passed over Mersey, and on further side carbon brush on Anzani broke and he was forced down near Port Sunlight. Telephone brought relief in motor from Waterloo. Meanwhile, Mr. Birch had borrowed brush from motor cyclist and returned. The smoke on lee side of Liverpool anything but agreeable to fly through, as although weather almost perfect, ground was almost invisible from 1,500 ft., and it seemed almost night.

Windermere (Lakes Flying Co.).—Mr. Stanley Adams with Mr. Bland on "Water Hen," and later Mr. Bland with Mr. Stanley Adams half hour.

Llanelly.—Three flights by Mr. Pickles before tea and two after. Before tea made trip to Swansea and back, returning at 0,000 ft., descending with spiral of 11 circles before landing. First flight after tea with passenger and second in dusk with rockets, flares, etc.

SATURDAY, May 3rd.

R.F.C., Central Flying School.—Strong south wind. No flying at school. Lieut. Shepherd, R.N., and Lieuts. Hubbard and Smith-Barry, R.F.C., arrived from Farnborough, on 3-80-h.p. Gnome-H. Farman biplanes 440, 444, and 445. Lieut. Smith-Barry doing excellent banked turns.

R.F.C., Farnborough.—On Bréguet 210, Lieut. Chinnery 25 mins; Sergt. Hunter 24 mins.

R.F.C., Montrose.—Capt. Longcroft on "B.E." with Capt. Alexander, Capt. Ker, and Lieut. Hay, of 3rd Gordons. Capt. Becke on M. Farman with Lieut. Dowse. Reconnaissance by Capt. Longcroft on "B.E." and Capt. Herbert on M. Farman, with Capt. Tucker, Lieut. Harvey and Lieut. Arthur.

Llanelly.—35 m.p.h. wind and intermittent rain, so only two flights, both over 2,000 ft., to get out of gusts.

Hendon.—At Graham-White School, Mr. Bayetto circuits. Mr. Manton testing.

At W. H. Ewen School, Mr. L. Turner test on 35-h.p. Caudron. Mr. Zubiaga made forced landing in field outside. Later, Mr. Turner flew machine back.

At Deperdussin School, Lieut. Bourke, Messrs. Barron and Hudson straights and circuits. Mr. Bauman right and left turns. Lieut. Porte tested 100-h.p. two-seater fitted with new wings and chassis, landing perfectly.

At Blériot School, M. Desoutter flying very well on No. 4. In afternoon Mr. Hamel out with Miss Trehawke-Davies on 70-h.p. Blériot and Mr. Slack on No. 5 with 50-h.p. Gnome.

Brooklands.—At Bristol School, Mr. Bendall with Lieut. Duncan, Major Merrick, and Mr. Grey.

At Vickers School, in morning Mr. Knight on biplane with Mr. Mitchell. Mr. Knight and Mr. Waterfall circuits on No. 5. Major Cameron circuits on biplane and Mr. Orr Paterson straights. Mr. Wight on No. 5 mono first time, excellent straights.

Salisbury Plain (Bristol School.).—Mr. Pixton with Lieut. Burns and Messrs. Adams, Garnett, Gipps, and Delaplane.

SUNDAY, May 4th.

Hendon.—Messrs. Verrier, Hamel, Hall, Collardeau, and Whitehouse all out.

Brooklands.—Mr. Hamel arrived from Hendon and stayed owing to bad weather.

At Vickers School, in afternoon Mr. Knighton on biplane, then with Mr. Mitchell.

New Pilots.

The following aviators' certificates were granted:—463, April 12th, 1913, 2nd Lieut. W. R. Read, K.D.G. (Bristol biplane, Bristol School, Salisbury Plain); 464, April 22nd, 1913, Sergt. H. V. Robbins (Maurice Farman biplane, Central Flying School, Upavon); 465, April 23rd, 1913, Shipwright D. Shaw, R.N. (Short biplane, Royal Naval Aviation School, Eastchurch); 466, April 23rd, 1913, H. C. Tower (Bristol biplane, Bristol School, Salisbury Plain); 467, April 23rd, 1913, Sergt. W. R. Bruce (Maurice Farman biplane, Royal Flying Corps, Salisbury Plain); 468, April 24th, 1913, Com. F. R. Scarlett, R.N. (Maurice Farman biplane, Central Flying School, Upavon).

It was decided that, in future, aviators' certificates should bear the date of the passing of the tests.

An Invitation to Aviators.

To-morrow, Friday, May 9th, at 3 p.m. the proprietors of the Palace Theatre, Shaftesbury Avenue, are giving a special display of cinematograph films of interest to aviators. At present the afternoon performance consists of those exceedingly interesting films taken by Mr. Kearton while hunting big game in Africa. These will be shown as usual, and afterwards special films will be shown giving pictures of the Zeppelin incident at Lunéville, and of aviation in flight, but perhaps the most interesting is a film illustrating exactly how a bird learns to fly. The film will be stopped at intervals to show the peculiar position of the bird's wings at certain moments. This will be followed by a film showing how a man learns to fly.

In order to interest aviators in these pictures, the proprietors of the Palace Theatre have sent out a large number of invitations to people connected with aviation and they have made arrangements that any pilot-aviator who has not received an invitation will be admitted free on presentation of his pilot's certificate at the door. The Lord Mayor of London will probably be present.

If to-morrow happens to be a bad day for flying, every aviator in the London district should make a point of visiting the Palace Theatre.

Water Cooling.

Mr. J. D. Roots writes :—" It has been generally and widely assumed even by experts and by writers of articles or of books on the internal combustion engine, that it is not possible to water jacket the radial cylinders of rotary cylinder engines.

"I would point out that all radial rotary engines can be provided with a thin copper hollow-ribbed jacket containing only a relatively thin film of water, say 3-16-inch thick, surrounding the cylinder walls, and that each such copper jacket could be connected by pipe at the inner end to the jacket of the next cylinder, and so on round all the cylinders. Indeed, so small an amount of water may be carried as to render the question of weight increase negligible. This film of water in the jackets so connected would not need any other or further supply, and would act perfectly as a water cooler by centrifugal action, inasmuch as the water would circulate effectively centrifugally without the assistance of a pump, the water at the outer or hotter cover ends of each cylinder would become most heated, and therefore would be relatively lighter than the water at the inner end of each jacket, and in the connecting pipes from jacket to jacket. Consequently, the water in the outer or cover ends of each jacket would always, immediately it became more heated, tend to move towards the centre, while that water nearer the centre, which would be relatively cooler, would tend to move outwardly to the ends of the jacket to replace the more heated water. Consequently, by centrifugal action alone, a continuous circulation in this thin film of water could be maintained, so providing that increased power and reliability in the rotary cylinder engine which is so desirable, and in which the air-cooled cylinder is at present deficient.

"Moreover, by keeping the cylinders cooler, not only a greater power could be obtained but probably only one-fifth of the lubricating oil at present used would be necessary, further increasing the life of the engine.

"It will be obvious to anyone who thinks about it that the centrifugal action referred to will be precisely similar relatively to the centre of each engine, as the thermo-syphon action acting by convection relatively to gravity on automobile engines."

Concerning M. Chevillard.

Mr. Eric Hayman writes :—" The interesting note in your current issue concerning M. Chevillard's performances at Hendon recently have led me to seek the hospitality of your columns. I should be the last to object to such really marvellous piloting were it not that I fail to see what advantage it is, save to the duly-thrilled spectators. I am open to correction, but it seems to me that we knew before he came to this country that a perfectly-tuned engine, and a very strong machine would stand on its head or its tail, or on either wing-tip, provided that any pilot had sufficient confidence to try the 'stunt' in question.

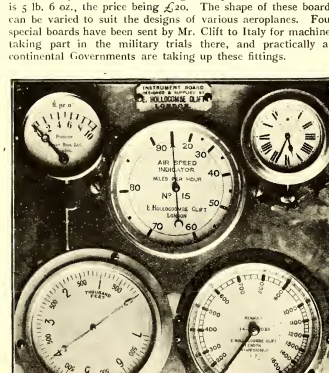
" When that long-suffering Henry Farman is banked to 85 degrees—and the photographs support my figures—the effective lifting surface is reduced to a portion of the rudder and about one square foot of main plane. The machine must therefore be virtually falling. The answer suggested is that he straightens up in time, and there lies the ground of my plaint. If he leaves it to the last minute—especially when over my chair—his hand might slip as did M. Desoutter's, or again, his elevator might refuse to stand the strain. The machine is wonderfully well constructed, but the hundredth chance might not come off, and we should lose the finest biplane pilot I have ever been privileged to watch. This sounds like the whining of a scaremonger, but I think you will see my position. If it is really for the good of the science, would he mind doing it over the Acrodrome, and not over the enclosures. If it is not for anyone's good, would he mind stopping it altogether? Every time he does it, the wonder of flying may increase to the idle spectator, but if he once didn't do it. . . . !

" Should this be of any general interest, it might find a place in your crowded and ever-interesting paper. If not, I only ask for the saving of a fine pilot, and the reputation of a fine machine—not for publicity."

[One is much inclined to agree with Mr. Hayman's point of view. At the same time there is a certain advantage to aviation in general in knowing what an aeroplane can do if put to it by a skilful pilot. Also, it seems probable that in war a pilot of M. Chevillard's class would have a better chance of escaping from the pursuit of a faster machine and of landing in safety, than would a pilot of ordinary ability. At the same time, pilots will be well advised to imitate M. Chevillard with caution, and when once such tricks are learned it is well not to continue them, but to reserve them for emergencies on active service, or when it is necessary to land on a small available space on a cross-country journey.—Ed.]

Aeronautical Instruments.

At the time of the Aero Show, reference was made to the excellent instrument boards for aeroplanes, designed and supplied by Mr. E. Hollocombe Clift. The accompanying illustration shows the board very well. It includes a revolution indicator and air speed indicator, altimeter, an eight-day watch, and a pressure gauge. The size of the whole board is 8½ inch by 8½ inch, and its weight complete with instruments is 5 lb. 6 oz., the price being £20. The shape of these boards can be varied to suit the designs of various aeroplanes. Four special boards have been sent by Mr. Clift to Italy for machines taking part in the military trials there, and practically all continental Governments are taking up these fittings.



The Clift Instrument Board.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.
For the convenience of Advertisers, replies can be received at the office of The Aeroplane, 166, Piccadilly, W.
Special PREPAID Rate—18 words **1/6**; Situations Wanted ONLY—18 words **1/-**. 1d. per word after.

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BRUTON, KNOWLES AND CO. are instructed by the Trustees and Mortgagees of W. W. Peet (in bankruptcy) to SELL by AUCTION, on the Premises (near Westgate Bridge, Gloucester), on TUESDAY, 20th MAY, 1913, at 2 o'clock precisely, in lots—

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FIFTH LONDON AVIATION MEETING

Whit-Saturday, May 10th.

The special event on this day will be the Grand Speed Handicap round the pylons in several heats and a final for the "Shell" prize of 100 guineas. There will also be an Altitude Contest for a trophy presented by Danny Maher, Esq., as well as a Cross-country Handicap for cash prizes. In between these contests, exhibitions will be given by the clever flyers at Hendon on machines of the latest types. Passenger flights will also be given.

Whit-Sunday, May 11th.

From 2.30 p.m. till dusk, there will be exhibition and passenger carrying flights, by the accomplished Hendon pilots. On these occasions it is no uncommon sight to see six or seven aeroplanes in the air at the same time, providing a most interesting spectacle.

Whit-Monday, May 12th.

The programme for this day will commence with a Bomb-Dropping Competition at 3 o'clock. These contests created a lot of interest last year and as this is the first one for the present season it should certainly not be missed.

The big event of the afternoon is the Cross-country Handicap for the magnificent "Giesler" Challenge trophy and 100 guineas. This is the second occasion upon which the trophy has been competed for, and it will have to be won three times before it becomes the absolute property of the winner. Splendid entries have been received for this race.

There will also be a Grand Speed Handicap for a Gold Watch presented by Horace Goldin, Esq., and cash prizes, and as usual, during the intervals between the events, there will be exhibitions on many different kinds of areoplanes.

Buy a Programme!

The programme will contain special articles by Mr. C. G. Grey, Mr. W. E. de B. Whittaker, and Mr. J. H. Ledeboer. There will be many interesting illustrations as well as a humorous drawing, "A Study in Eyebrows." Advance copies of this programme can be obtained from the London Aerodrome Offices, 166 Piccadilly, W., for 3d. post free.

Admission 6d., 1s. and 2s. 6d.
Motors (including Chauffeur) 2s. 6d.

London Aerodrome, Hendon

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The Grahame-White Aviation Co., Ltd

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Phone: Kingsbury 22.
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166, Piccadilly, W.
Phone: Mayfair 5955.
Wires: "Claudigram," London.

Routes to the Aerodrome

By tube travel to Golders Green, where 'buses can be taken to the "Bell," Hendon, or on Saturday and Sunday to the "Greyhound," also on Sunday by Service 83 to Collindale Avenue. The best route by motor is along Edgware Road to Collindale Avenue. From the south of London the best route is via Willesden Green, thence by tram.

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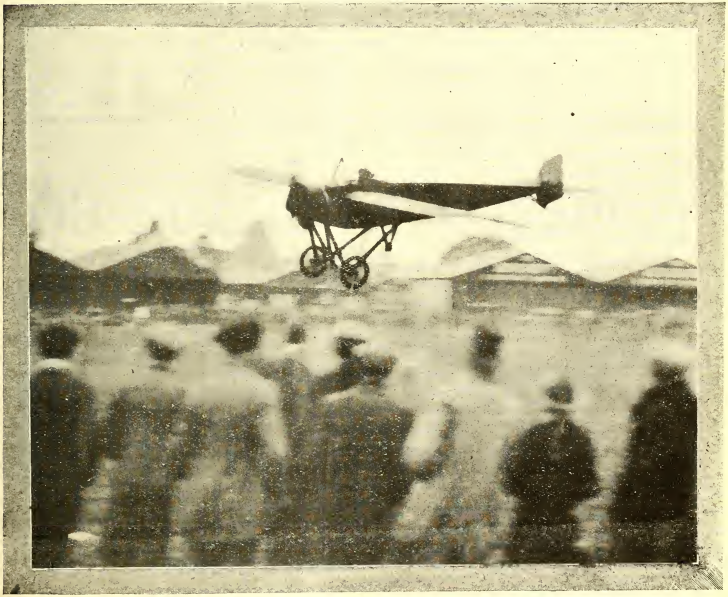
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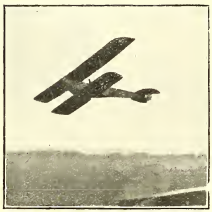
Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, MAY 15, 1913. No. 20.

AT FULL SPEED.



M. Brindejonc des Moulinais on his Morane-Saulnier (80-h.p. Gnôme) winning the Giesler Cup race at Hendon on Whit-Monday.



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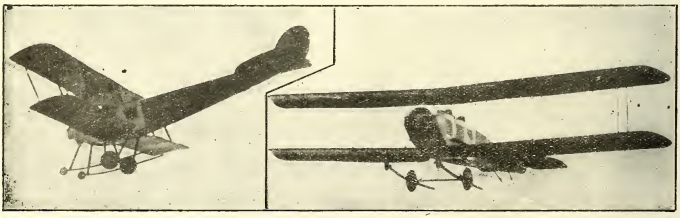
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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London.

Liverpool's Opportunity.

By her enterprise in proposing to form a flying corps of her own, and by taking the first practical steps towards doing so, the City of Liverpool has more than justified her claim to be the first city of the Empire, after the capital. But then Liverpool is essentially a seafaring city, and your seafaring man has ever more enterprise than his stay-at-home inland kinsmen.

Thanks to the initiative of her citizens Liverpool has now the opportunity of showing the whole British Empire how the thing ought to be done, but if Liverpool is not very careful she will find herself in a few months minus several thousands of pounds, and much wasted endeavour, and still without her flying corps. That is just what will happen if she allows herself to fall into the toils of the War Office.

Colonel Seely's letter to the Lord Mayor of Liverpool, which was read at the enthusiastic meeting held in that city on May 7th, amounts simply to this: We don't want your local flying corps, but we do want your money. If your young men like to join the Royal Flying Corps you can pay for their training, and if they please us we'll accept them, but only for four years. We won't give them any pension. They won't be able to fly near Liverpool. Still, give us your £40,000 to equip a squadron of the R.F.C. and we'll do you the favour of accepting it as coming officially from the City of Liverpool. If Liverpool supplies the cost of a squadron to the Royal Flying Corps on those terms, then Liverpool deserves the old jibe which distinguished the Manchester "business man" from the Liverpool "gentleman."

Territorial Aviators.

If Lord Haldane's Territorial Army was really considered a serious proposition by those who profess to believe in it there would be no difficulty at all in forming a Liverpool Air Corps as a new unit of the local Territorial brigade, and there is just a possibility that if Liverpool finds the £40,000 necessary to equip a squadron, or the £12,000 or so necessary to equip a single "flight" of aeroplanes, and goes to the War Office with the proposition that it can either have a Territorial section of the R.F.C. at Liverpool or go without the money, the War Office will find a way to do it, or at any rate it might agree to establish an aeroplane station near Liverpool, under the command of a regular officer of the Royal Flying Corps, and appoint the flying officers, and perhaps the flight commanders, from among Liverpool men who joined as Special Reservists.

There is no lack of men of the right kind in Liverpool, and Messrs. Melly, Birch and Hardman are good enough fliers to teach a good deal to some of the regular officers who have been appointed to the R.F.C., but these Liverpool aviators cannot spare three months of their time in which to go and study soldiering at the Central Flying School, though they would willingly do all the necessary military training in their spare time, if they could do it near Liverpool.

But that is not what the War Office wants. The War Office wants officers of the Regular Army as fliers, not spare time volunteers—and, of course, from the point of view of forming a highly efficient branch of the Expeditionary Force, it is quite right. Still, for home defence purposes, the local flying corps has its value.

On the other hand Colonel Seely would like that £40,000, as it would provide him with a fully-equipped squadron—remember there is not yet one fully-equipped squadron of the R.F.C. in existence. Also it would save him at least one of his periodical troubles with the Treasury, when money is short and M.P.'s are demanding in the House of Commons to know how many effective aeroplanes he has really got. That £40,000 might help to fill in one of those awkward gaps between the "spasmodic money" which, as General Henderson explained, means "spasmodic orders."

An Alternative Scheme.

There is, however, another alternative which has not yet been put forward, and, as Liverpool is the first port in the kingdom, after the Port of London, besides being in many ways a more essential port than London itself, this alternative scheme seems to suit her case admirably.

Liverpool wishes to have a flying corps primarily for her own defence. Liverpool exists because she is a port. Therefore what Liverpool needs is not a squadron of the Military Wing, F.R.C., which may be taken away bodily for any little trouble in which the Expeditionary Force is involved, but a permanent Naval Air Station.

The strategic plan at present is to establish a line of these coast defence stations along the East coast, but the West coast must have its stations ultimately, so why should not Liverpool be the first? Their Lordships of the Admiralty are the most reasonable people in the world. Things are done at the Admiralty while the War Office is thinking about forming a committee to consider the matter. Therefore, why not offer to equip and man a Naval Air Station at the mouth of the Mersey, if their Lordships approve? This seems to me to be Liverpool's real opportunity for taking the lead in aerial defence among the cities of the Empire.

The plan offers many advantages to those who

have to find the money for the proposed Liverpool Flying Corps. In the first place, very little land is needed. It would be better if there was a landing-place for shore-going aeroplanes near the sheds, as it would tempt aerial visitors to come there, but it is not essential. So long as there is enough room for the sheds themselves, they may be on the water's edge, or anywhere on the foreshore. All the training of pilots can be done on the water.

Further, as the machines would be waterplanes, hardly any road transport would be necessary. It might be necessary to have a couple of motor wagons in which to bring machines back by road if they alighted owing to a breakage at some point along the coast and could not be repaired on the spot, and two or three cars would be needed for the use of the personnel of the station, either to fetch stores from Liverpool or to take pilots to and from the station.

In the case of a military squadron, the transport wagons cost almost as much as the aeroplanes. Each aeroplane must have its own motor wagon. Other wagons are needed for tents, spare parts, stores, etc. Cars are needed for the pilots and mechanics. Portable sheds have to be provided for the machines. And, altogether these and other accessories which would not be needed at all at a naval air station probably run away with more money than the aeroplanes themselves.

Soldier or Sailor?

The formation of a locally-supported naval air corps should also be an easier problem from the official point of view. In the Military Wing, R.F.C. everything is rigidly laid down. A civilian wishing to join, becomes an officer of the Special Reserve on probation—that is to say he becomes a militiaman, not a volunteer. He has to do three months' training at the Central Flying School before he can be appointed to a squadron, and as the accommodation there is limited he may have to wait a year before he can go up for his training. Thus, even if the War Office strained its routine to the utmost, and consented to station a squadron near Liverpool, there would be very little chance of getting anything done inside twelve months, and even then it would not be likely that Liverpool aviators would be appointed.

In the Naval Wing, R.F.C., things are done differently. Civilians join as members of the Royal Naval Volunteer Reserve, and I gather that the conditions of enlistment in that force are at once more elastic and more definite than those of the Special Reserve of the Army. At any rate the Admiralty has a wonderful way of making its own rules to meet special cases as they crop up, and if the suggestoin of a locally manned and equipped naval air station met with their lordships' approval, I will wager that the regulations of the R.N.V.R. would be made to fit the conditions somehow.

Another point to be considered is that there are some hundreds of officers of the Royal Naval Reserve whose headquarters are at Liverpool, and I know that many of these are anxious to fly. A naval air station would give them opportunities of learning while their ships were in the docks. Already several officers of the R.N.R. and R.N.V.R. have been appointed to the Naval Wing, R.F.C., and owing to the shortage of officers in the Navy a young man of the right class, physically, mentally, morally, and socially, who did well as an officer of the R.N.V.R. at the Liverpool Naval Air Station, would stand a much better chance of obtaining a permanent appointment as an officer in the Royal Navy than ever he would of becoming an officer in the Army if he began merely as a civilian pilot in the Reserve of the Military Wing.

The Advantages of a Naval Air Station.

I hope those energetic and patriotic gentlemen who are backing Liverpool's great work will do me the honour of considering my suggestion. Let them consider that the waterplane scheme will give them more aeroplanes and less motor wagons for their money, that it will give their young men a better opening to a career in the King's Service; that in dealing with the Admiralty they will get twice as much done in a quarter the time; that the chance of having a local waterplane station locally manned is much greater than is the case if they hold out for a land station; that the Naval air corps is bound to be a bigger thing than the military flying corps because our Navy is bigger than our Army; that in approaching the Admiralty they are approaching rational beings, and that in approaching the War Office they are up against a cumbersome and inelastic machine; and that Liverpool as a great port is primarily concerned with naval defence.

Let them picture to themselves two alternatives: One, a squadron of the R.F.C. equipped with Liverpool's money, manned by anyone from anywhere, never seen, never heard of, with no local tradition, and no local interest. The other, a naval air station at the mouth of the Mersey, manned by the pick of Liverpool's youth, whose heritage is the sea, always there guarding Liverpool's commerce, continually manœuvring about the estuary where the people can see them. Picture the flight of the whole squadron—"en escadrille" as the French term has it—up the Mersey to Eastham and back on high days and holidays when all Liverpool is there to behold and wonder and swell with pride at the result of the City's patriotism. And think how jealous Manchester would be. Which is the more tempting picture?

C. G. G.

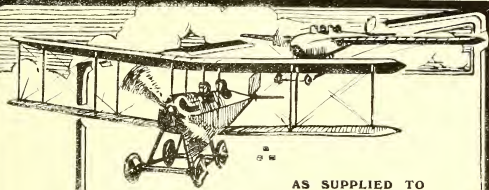
Concerning Searchlights.

An officer with experience of the subject writes:—"I saw an article in one of the weekly illustrated papers to the effect that searchlights are of little use in locating even large aircraft, on account of their maximum range being six miles. The projectors referred to were called the latest pattern of 36-in. diameter.

"I may say that to begin with the 36in. lights are already superseded by twin-24in., and the range at which a ship can be "picked up" by those who are thoroughly practised at them, is rarely over three or four miles on a perfect night. Further, I should like to mention that in recent tests with military harbour defence lights, the lack of experience of the operators enabled ships to come within one mile of the lights without being observed on clear nights. The lights were 36 in. projectors, with a more powerful electric installation than is possible in a ship. The lights were often well enough directed on the ships to dazzle those on board, but even then the observers could not see them.

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The French Aeronautic Services.—*(Concluded)*

BY W. E. de B. WHITTAKER.

A *port d'attache* consists of dirigible outfits, an aerostation company, and a depot of matériel (with a workshop). It is under the command in times of peace of one of the attached officers nominated by the Ministry.

An aviation centre consists of one or more aviation sections and a depot of matériel (with workshops). If composed of a single section the centre is under the command of the *chef de section*. If of more than one section, it is under the command of a higher aviation officer distinct from the *chefs de section*.

Frequently a *port d'attache* and an aviation centre are stationed at the same place, and the two are then under the command of an officer of higher rank. One depot only is supplied, but the workshops are distinct. As might be imagined, the depot is always under the orders of the executive commander. If a port or a centre is alone its C.O. fulfils the duties of a *chef du service aeronautique*.

For purposes of administration the entire aeronautical service, including aviation, is divided into three large groups, each under the command of a colonel or a lieutenant-colonel. The flying services in the French colonies, except so far as North Africa is concerned, are exempt from this arrangement.

The groups are as follows :—

First Group (centred at Versailles).—The military government of Paris, 3rd, 4th, 5th, 6th, 10th, 11th and 20th regions (*i.e.*, Army Corps districts), and North Africa.

Second Group (centred at Reims).—1st, 2nd, and 6th regions.

Third Group (centred at Lyon).—7th, 8th, 12th, 13th, 14th, 15th, 16th, 17th, and 18th regions.

Each unit of the aeronautical service is finally under the command of the military governors or general officers commanding army corps in whose districts they lie. These officers have complete and direct control of the aeronautical service in their districts so far as general discipline, exterior matters, public order and tactical instruction are concerned. They exercise their authority in the usual manner through the group commandants in matters of internal discipline, personnel, administration and mobilisation, and through the directors in matters concerning the administration of technical matériel.

They cannot incur any expense beyond the limits laid down by the Ministry of War.

Governors of fortified places exercise, under G.O.C. army corps, similar control as to the aeronautical units attached for the defence of their positions.

We now reach the most important officer in the economy of things aeronautic, the Permanent Inspector of Military Aeronautics. His duties consist—

(1) Of making technical inspections of all the personnel and matériel in the aeronautical service.

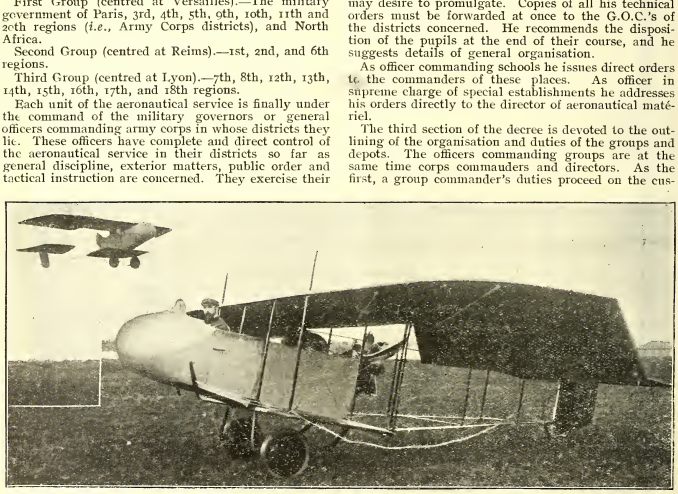
(2) Of controlling the training of the flying personnel and also of directing the technical training of the entire personnel.

(3) Of directly commanding the schools and special establishments.

He makes known the dates of his inspections through the G.O.C. army corps. If the dates do not agree with the general military disposition of affairs in the region he must abide by the decision of the respective G.O.C.'s. In matters of technical training he must submit to the Ministry of War such regulations as he may desire to promulgate. Copies of all his technical orders must be forwarded at once to the G.O.C.'s of the districts concerned. He recommends the disposition of the pupils at the end of their course, and he suggests details of general organisation.

As officer commanding schools he issues direct orders to the commanders of these places. As officer in supreme charge of special establishments he addresses his orders directly to the director of aeronautical matériel.

The third section of the decree is devoted to the outlining of the organisation and duties of the groups and depots. The officers commanding groups are at the same time corps commanders and directors. As the first, a group commander's duties proceed on the cus-



The new "démontable" Henry Farman. The machine is easily dismantled, packed, transported and reassembled; it carries fuel for two hours, and is intended only for use with artillery. Essentially, it is a single-seater, though a passenger can be carried. The span is 30 ft. (centre cellule and extensions each measuring 3 metres). Speed about 74 m.p.h., and, with full load, it climbs more than 1,650 feet in 6 minutes. The time taken to assemble or dismantle is about a quarter of an hour.



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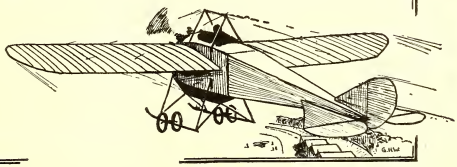
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tomary military lines. As the second, he supervises the work of each of the *directions* in his group district. His personal staff as director consists of an administrative officer, an adjutant, some military secretaries, and some civil employees. The number of these latter varies according to necessity. At the station of each *direction* one of the administrative officers on the strength of the *direction* is placed in command; or if the *direction* be one of peculiar importance, a specially selected officer is appointed.

The group commander is expected to visit, at stated intervals, each of the units under his command. In the case of those units situated more than fifty miles from headquarters, he is expected to make eight visits a year only.

The *chef du service aeronautique* in a place must transmit orders, and is responsible for their execution. He must attend to matters of discipline, administration, mobilisation, and so on. His powers run parallel with those of a regimental C.O.

The depots and workshops must, under the orders of the director, attend to—

(1) The maintenace in a fit condition of all matériel, and ensure its being in the required place at the required time.

(2) The collection of all things required for instructional purposes and the buying of necessary things for running requirements.

(3) The keeping of proper accounts of all expenses relating to purchases, repairs, and matters of instruction.

The depots carry out all repairs to aeroplanes or dirigibles which do not require highly specialised workmen or the personal supervision of the original makers.

The personnel of the depots, under the orders of the *chef du service aeronautique* as *chef de depot*, consists of one or more officers (assistants), one or two administrative officers or adjutants, some civil servants, and some civil employees. The *chef du service aeronautique* decides the number and the grades of the soldiers attached to a depot.

Such of the flying personnel as is undergoing training in civil flying schools owing to lack of accommodation at the military schools is attached for administrative purposes to a centre indicated by the Ministry of War.

Such aeronautical matériel as is stored in various garrisons is placed under the care of a depot indicated by the Ministry of War.

The staffs of special establishments (which proceed according to special regulations) is as follows:

Direction of military aeronautical matériel: one colonel or lieutenant-colonel, one captain or lieutenant, one administrative officer, and one administrative adjudant.

Central establishment of military aeronautical matériel: one superior officer, six captains or lieutenants (with an additional number of officers borne *hors cadres* as aviators or dirigible pilots), four administrative officers, two administrative adjudants, and two civil servants.

Laboratory: three superior officers or captains, nine lieutenants or sub-lieutenants (with an additional number borne as above), six administrative officers, four administrative adjudants, and five civil servants.

Such is the elaboration of a system according to the dictates of experience gained in the last three or four years. By organising in such detail it is possible to legislate in some way against the increases and developments of the future. Without a system confusion is certain to come. With a system it can be greatly reduced. One does not suggest that the British Army should copy the organisation outlined above, but there is a great difference between the standard of efficiency in France and in England. The nucleus of an organisation already exists in the Royal Flying Corps, but it cannot progress at an adequate rate while it is starved of money.

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty appointments, May 6th:—

Sub-Lieutenant—F. E. T. Hewlett, to the "Hermes," on commissioning, to date May 7th.

Admiralty appointments, May 8th:—

Royal Naval Reserve. R. H. Kershaw has been appointed to the "President," additional, as probationary sub-lieutenant for course of instruction at Central Flying School, to date May 17th.

From the "London Gazette," May 6th:—

Special Reserve of Officers.—Royal Flying Corps, Military Wing.—Sec. Lieut. (on probation) H. de G. Warter is confirmed in his rank.

An Order in Council was issued under date April 18th containing the following provisions:—(1) Medical officers who obtain the certificate of the Royal Aero Club at their own expense to be eligible for the gratuity of £75, provided the permission of the Admiralty to undergo such training has first been obtained; (2) medical officers trained at the Central Flying School or at a naval flying school to be paid half the authorised rate of flying pay while under instruction; (3) after attaining such standard of proficiency as may be laid down, medical officers to be paid the authorised rate of flying pay, (a) for any days on which they may be required to fly on duty, (b) for days on which it may be necessary for them to carry on practice flights, not exceeding two per month.

H.M.S. "Hermes" was commissioned at Chatham on May 6th, by Captain G. W. Vivian, R.N., that it may act as parentship to the Royal Flying Corps, Naval Wing. All the officers of the Naval Wing who are at Eastchurch and are at present borne on the books of the "Actæon" will be transferred to the books of the "Hermes." Her station is to be Sheerness, and she will be under the orders of the C.-in-C. at the Nore. Captain Vivian recently took his aviator's certificate at the Central Flying School.

On Friday afternoon, at Farnborough, the King, accompanied by the Queen, Princess Mary and Princess Victoria, witnessed a demonstration by no less than two airships and seventeen aeroplanes, in the course of which the "Beta" dropped, by parachute, a photographic plate, which, when developed in a portable dark room on the field, showed a snapshot of his Majesty sitting on his charger. The "Gamma" dropped a bomb which exploded with great violence and set fire to a gorse bush. The aeroplanes dropped some bombs and then, at a rocket-signal, landed.

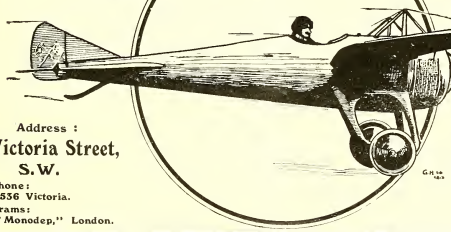
The aeroplanes were sent up at intervals of one minute. They included B.E.s, a Short, H. and M. Farmans, Bréguets, and a Blériot.

Eight of the machines came from No. 3 Squadron at Lark Hill, and there would have been a ninth—another Maurice Farman—had not Sergeant Ridd, R.F.C., been forced, by an engine defect, to land near Andover while flying to Farnborough.

The royal visitors also inspected the car of the new Astra-Torres airship, which is being erected for the Admiralty, at the Royal Aircraft Factory, and his Majesty remarked upon the ship-like effect of its navigating bridge.

It is rather lucky for the Royal Flying Corps that a week of bad weather has visited the east coast, or it would have shown up a bad state of affairs. There has been no flying done for a week at Montrose, ostensibly owing to the bad weather, but more essentially owing to the lack of aeroplanes. Two Maurice Farman's have been under repair for the past month and the other one was badly damaged near Aberdeen on Monday, May 5th. The two "B.E." machines

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are also under repair, one having a faulty engine, so that the whole squadron is out of work. This is a lamentable position for the supposed crack squadron of the Royal Flying Corps, and it is a striking example of the position the Flying Corps might find themselves in event of war. The sooner the squadrons are given their proper number of aeroplanes, the better it will be for Colonel Seely's reputation.

FRANCE.

It is intended that the naval hydro-aeroplanes shall take part in the naval manœuvres which begin off Toulon on May 19th. Captain Paton (commanding hydro-aeroplane service) is at Toulon considering the best means of providing shed accommodation for the aeroplanes engaged.

The Farman and Nieuport hydro-aeroplanes belonging to the navy and stationed at Saint-Raphael have been in constant use during the past few weeks. Enseigne-de-vaisseau Fournier, on a Farman biplane, has made several flights of considerable duration over the sea, the town, and the neighbouring country. So far, the French naval service has not developed its flying corps with the speed that would have been expected if its military activities are taken as a standard.

Another death in the aviation service has to be announced. The roll of flying fatalities in the French service is increasing at the rate of one a week. This rate gives some indication of the number of people flying and also of the number of miles covered. On May 3rd, on the military aerodrome of Saint-Cyr, Sergeant-aviator Battini was flying a Maurice Farman biplane in practice for his military brevet. He began to descend from a height of 400 ft. without cutting off his ignition. With his engine apparently giving full power, he drove the machine straight into the ground. He was killed instantly. Louis Ignace Battini, sergeant 86th Regiment, was the brother of Lieutenant-aviator Battini of the Epinal centre. He was born on January 28th, 1891, at Saint-Andre-de-Bozio, Corsica, and took his pilot's certificate on February 26th, 1913 (No. 1263).

It is announced that the equivalent of a "staff-ride" is to take place in aeroplanes in the district of Troyes from May 10th onwards. Fifteen staff-officers and one general officer are to undergo a course of training in aerial observation. Two Bréguet biplanes, piloted by the N.C.O.'s Vaurin and Petit, and a Borel monoplane piloted by Quartermaster Pinsard, have arrived at Troyes in preparation for the course.

On May 9th King Alfonso, accompanied by the President of the French Republic went to the aerodrome at Buc to watch various flights. On his arrival at 5 o'clock he inspected four escadrilles and their transport drawn into line. Fifteen private machines were also displayed. General Hirschauer was in attendance. The majority of the military aviators then flew to rejoin their posts. The civilian aviators then gave a display, among them being Garros and Guillaux. It is said that 96 military and civil aeroplanes were engaged in this demonstration of the art of aviation.

Escadrille 5, normally stationed at Epinal, is still at Chalons taking part in fire-control experiments. This escadrille consists of Maurice Farman biplanes piloted by Captain Saint-Quentin, Lieutenants d'Abrantés, Gignoux, Grézéaud, and Quartermaster Quennehen. Another escadrille of Henry Farman biplanes is engaged in consfant reconnaissance practice between Chalons and Reims.—W.

GERMANY.

The experimental station of hydro-aeroplanes at Keil is now ready to receive eight machines.

During 1913 it is intended that 270 reservists of all arms shall be attached for service to the aviation corps to undergo a training course of four months' duration. Thirty of these men will be trained as aviators and the remainder as mechanics.

The new military Zeppelin, "Sachsen," made a trial trip on May 3rd. On the following day it left Friedrichshafn at 6.40 a.m. and reached Augsburg, Bavaria, at 8.50 a.m. After making a circuit of the town it left at 10 a.m. for Friedrichshafn and arrived at 1 p.m. Two days later it repeated the same voyage again without incident.—W.

The first military aeroplane purchased by national subscription has now been completed at Mulhouse. It is an "Aviatik," and is to bear the name "Heidelberg," as the money collected at Heidelberg was earmarked with a like request. After paying a visit to the town whose name it bears, the machine will be stationed at Strasburg.—B.

BELGIUM.

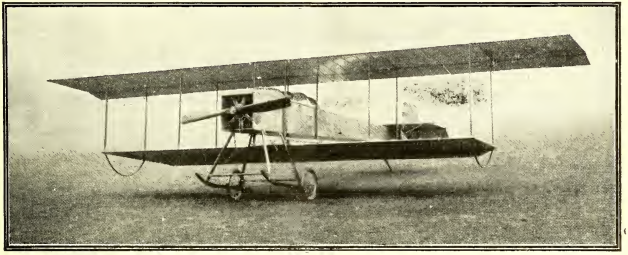
A royal decree was published last week outlining the organisation of the military flying corps. An aviation company is to be formed with several escadrilles, each of four aeroplanes. Attached to each escadrille will be four officer-pilots and four officer-observers. In addition, there will be in each escadrille an O.C., six mechanics, several N.C.O.'s, and an indefinite number of men. Transport per squadron is to consist of four auto-tractors, with four "remorques," or trailers.

The single aviation centre, at which the military school will also be situated, will be under the command of a captain. The staff is to consist of two captains junior in rank to the C.O.,



Some Italian military pilots and a Bréguet biplane at Pordenone, Italy.

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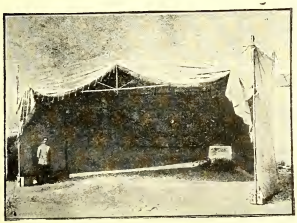
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or lieutenants, acting as instructors; one captain or lieutenant acting as tactical instructor, and also an administrative officer. The fortified places of Liége and Namur are each to have an escadrille of aviators.—W.

AUSTRIA-HUNGARY.

On May 8th, at Vienna, a pistol duel was fought between two officers of the aviation service. Lieutenant Weiss, 2nd Bosnian-Herzegovinian Infantry, was seriously injured and died during the afternoon.

For some time the navy has had on order a Paulhan-Curtiss hydro-biplane (flying boat). On May 7th Messrs. Wildeman and Wittmer, the American pilots, put this machine through the required flying tests at Berzons before an Austrian commission.—W.

SIAM.

Lieutenant Nai-Thip, of the Siamese army, who was injured some months ago through colliding with M. Collardeau at Villacoublay, is continuing his course of training at the Nieuport School at that place.—W.

FOREIGN NOTES.

France.

A Bill has been submitted to the Chamber by the Minister of Public Works regulating the traffic of the air. Though in England the lack of enthusiasm in flying has kept the number of our aviators at a very low figure, the amount of flying done in France from day to day demands some manner of official control. The rights of private property are to be laid down and the security both of aviators and the general public is to be ensured as far as possible.

The Bill was laid on the Table by the Minister of Public Works (M. Thierry) on the afternoon of May 9th. It has been drafted by the Committee of Aerial Navigation and is to regulate air traffic within the confines of France.

In the course of an interview the Minister concerned stated that the number of aeroplanes in France had increased to 1850. Legislation in aerial matters on the other hand has made no progress.

The new Bill reverses the former position as to the ownership of the air. The air above the soil is now common property and no longer appertains to the lord of the soil. No aviator must land on enclosed property near houses without the permission of the proprietor, and each aviator is responsible for damage done.

All private aircraft must possess a navigation permit and must have a licensed pilot on board. Their registration number must be clearly displayed. As in England, there are certain prohibited areas, but their position and extent are not yet stated. Explosives, arms, ammunition, photographic apparatus, wireless telegraphs or wireless telephones and carrier pigeons are all forbidden to be carried.

The pilot is supposed to keep a log of all his journeys and this must be kept intact for at least two years after the last entry made. Aircraft belonging to the army or navy will display a special sign.

No aircraft belonging to a foreign State is permitted to land in French territory.

Breaches of these rules can be punished by fines from 10s. to £40 or by imprisonment from one day to one month. Aeronauts' or aviators' certificates can be suspended for six years.

The Legion of Honour has at last the honour of bearing on its rolls the name of Robert Esnault-Pelterie. Despite his ceaseless efforts to forward the science in which France at the moment stands supreme, the French Government has not until now seen fit to bestow on him the privilege of wearing a ribbon that is at the call of any political wire-puller, and at the same time remains the only honour in the gift of the President. In the same list appear the names of Jules and Honoré de Lareinty Tholozan, officer-aviators of the reserve, and of Etienne Giraud, the amateur aviator.

On January 16th, 1912, the ss. "Carthage," of the Campagnie Generale Transatlantique, sailing from Marseilles, Tunis, was seized by an Italian ship of war when about 17 miles from Sardinia, on a charge of carrying material of war. On board was a Caudron biplane belonging to M. Duval and parts of an aeroplane the property of M. Obre. The Italian authorities believed that these aeroplanes were destined for the Turkish Army in Tripoli and not for the carrying out of innocent exhibition flights in Tunis. The aviators in vain claimed their goods, but one of them, M. Duval, refused to enter into an undertaking to confine his flights to the air over French soil. The matter, after considerable delay, was brought before a Court of Arbitration at the Hague, and on May 6th a decision was announced. Italy is to pay £6,400 compensation for the seizure of the "Carthage." Of this sum £3,900 is to go to the owners of the vessel, £1,000 to the aviator M. Duval, and £2,400 to the passengers and the owners of the freight. These sums amount to much less than was claimed by the injured parties and the verdict is regarded as in some degree favourable to Italy.

The Spiess rigid dirigible made another flight at Saint Cyr on May 7th. It had on board the Comte de la Vaulx, M. André Schelcher, General Hirschauer, permanent inspector of aeronautics, Colonel Bouttieaux, Lieutenants Caussin and Guyot.

On May 7th, M. Eugene Gilbert, unwearied by his recent great flights, flew on a Morane-Saulnier monoplane (50-h.p. Le Rhone) from Paris to Clermont-Ferrand, without a stop. He left Villacublay at 8.50 a.m. and reached his destination after having flown over the Puy de Dome, at 12.15 p.m. His average height throughout the journey was 5,000 ft.—W.

Germany.

Of aeroplane circuits and contests there are no end in Germany this summer. Besides the Prince Henry Circuit, which will be well on its way before these lines appear in print, and the various Berlin weeks, we are promised a Mecklenburg and an East Prussian circuit, both on rather important lines, and a Kiel Week, with prizes presented by War Office and Admiralty.—B.

Russia.

The Moscow Aviation Club is arranging a "rally" contest for the end of the month on similar principles to the motoring rallies, when cars start from various quarters to one given destination. In this case the aeroplanes come from four directions to Moscow, the route being Tver-Klin-Moscow, 164 kilometres; Malogaroslawez-Podolsk-Moscow, 178 kilometers; Kjasan-Bronnitzky-Moscow, 192 kilometres; and Wladimir-Pokrow-Moscow, 178 kilometres. It may be that the second route receives some alteration, as a start may be made from Tula in lieu of Malogaroslawez.—B.

Some New American Aeroplanes.

The Burgess aeroplanes are not only among the best-known American aeroplanes, but are also among the best-built of them, as those who recollect Mr. Sopwith's performances upon the Burgess-Wright biplane will readily believe.

Two of the most recent Burgess productions are illustrated in this issue, namely, the 1913 Coast-Defence hydro-aeroplane, Model I; and the 1913 Naval hydro-aeroplane, Model K—a craft of the "Flying Boat" type.

The Burgess Naval Flying Boat was designed primarily to meet the requirements of the United States Navy. Its hull, power plant, and main surfaces each form separate units capable of being assembled and taken down quickly. The principal innovations in the design include: firstly, a triangular arrangement of wing struts, allowing the upper plane to be staggered forward of the lower plane; secondly, the upper and lower wing surfaces are permanently attached to each other, but are capable of folding together; thirdly, the peculiarly shaped hull; and fourthly, the detachable unit power section.

The Burgess Coast Defence Hydro-aeroplane of 1913 has several features which distinguish it from any other aeroplane ever constructed. Among its special features are the long enclosed body, in the bow of which are carried the aviator and passenger, in tandem, well forward of the supporting surfaces, so that both have an unobstructed view.

The power plant is amidships, behind the crew, and drives twin propellers by chain-and-sprocket gear. The tail, including the elevator and the double rudders, is similar to the earlier model H. The supporting surfaces are built nearly flat, with a slight reverse curve and are covered with strong linen, "doped" in the usual way.

There are two hydroplane hulls of novel design, the bottom sloping down to an angular step under the centre, while the aft half of the bottom is of concave cross section.

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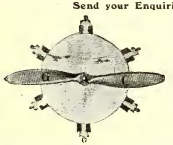
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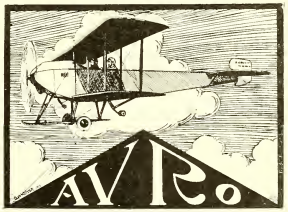
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Questions in the House.

Aircraft.

Oral Answers, May 6th, 1913.

Clement-Bayard Airship.

7. Mr. Fell asked the Secretary for War if he would state how his Department ascertained that the Clément-Bayard airship was slow in speed and on control compared with the War Office standards, seeing that the airship was never navigated by the Department, and by comparison with what airships belonging to the Department was the standard of speed and control fixed?

Colonel Seely: The airship was inspected by War Department officials in Paris, and one officer came over in her from Paris. The ballooning experts of that time were doubtless well aware of the standard which should have been obtained in these respects from such an airship, and what was being done abroad.

Mr. Fell: Would not the airship have been useful in any case for training purposes?

Colonel Seely: I have explained she was found to leak so badly that it would have cost a large amount to reinflate her daily.

Mr. Du Cros: Is it not the fact that, apart from the envelope, the ship was in good condition?

Colonel Seely: This happened a long time ago, and there is now no one at the War Office who was concerned in it. So far as I am aware, the airship was serviceable, except as regards the envelope. A mistake was made, and it was due to the desire to co-operate with the patriotic offer of hon. gentlemen, of whom the hon. Member was one. It was a mistake, but not a big one.

Colonel Yate: How long did the War Office have the airship before she was tried?

Colonel Seely: I cannot answer that without notice.

Mr. Fell asked if the War Office was ignorant of the fact before the Clément-Bayard airship was purchased that it had been previously used at the French manœuvres.

Colonel Seely: The reply is in the negative.

Mr. Fell asked if there was any garage or shed at Aldershot capable of containing the Clément-Bayard airship at the time of its purchase by the War Office.

Colonel Seely: The reply is in the negative.

Valkyrie Aeroplanes.

20. Mr. Du Cros asked how many Valkyrie aeroplanes were included in the list of machines recently supplied to Lord Montagu as being available for service; are these aeroplanes in constant use; and, if so, what is their average speed?

Colonel Seely: No such aeroplanes were included.

Royal Flying Corps.

21. Mr. Du Cros asked how many civilian pilots had been enrolled in the Royal Flying Corps and the Reserve?

Colonel Seely: Five civilian pilots are enrolled in the Military Wing and four in the First Reserve; eighteen have been selected on probation.

Envelopes (Army Airships).

31. Mr. Du Cros asked, in reference to envelopes of Army airships, which from time to time become unfit for service through usage, whether it is intended to renew the envelopes or whether it will be necessary to discard the airships?

Colonel Seely: Envelopes have been renewed when the airship is in other respects satisfactory and efficient. Each case has to be considered on its merits.

Non-Rigid (Naval) Airships.

83. Mr. Hunt asked the First Lord of the Admiralty what is the size of the two non-rigid airships on order for the Navy; when are the contractors bound to deliver them; are they being built in this country; and can he give their estimated speed?

The Parliamentary Secretary to the Admiralty (Dr. Macnamara): The capacities of the airships are 229,450 and 300,050 cubic feet. Their estimated speed is over 40 miles per hour. One airship is in this country and will shortly be undergoing trials. The other is on the way to this country after having undergone satisfactory preliminary flight trials.

Mr. Hunt: Was either of them built in this country?

Dr. Macnamara: Neither.

Protection Against Airships.

84. Mr. Hunt asked whether one or more of our newest ships of the "Dreadnought" type have had, or are about to have, protection of any sort provided for them against high explosives discharged from above from airships?

Dr. Macnamara: I am advised that the disposition of armour is a matter that should not be made more public than is absolutely necessary.

Mr. Hunt: Is any provision made for bombardment from the air?

Dr. Macnamara: I am always anxious to give every item of information that is possible, but this must be always subject to the public interest.

Airship Bases Abroad.

85. Mr. Amery asked what arrangements are being made for the creation of adequate airship and waterplane bases at Gibraltar, Malta, Cyprus, Alexandria, Aden, Singapore, Hong Kong, Wei-hai-Wei, Simonstown, Jamaica, and Bermuda?

Dr. Macnamara: This question will be considered in due course.

Written Answers, May 6th.

Aircraft.

Colonel Burn asked the Secretary of State for War how much the Government gave for the Clément-Bayard airship; and did their technical advisers report favourably upon it?

Colonel Seely: The War Office paid £12,500 for this airship. The Parliamentary Aerial Defence Committee urged the advisability of purchasing the airship, but there is no record of the advice tendered to the Army Council by any technical experts in the Government service.

Mr. Amery asked the Secretary for War what provision there is for officers of his Majesty's forces stationed in Ireland who may wish to learn to fly?

Colonel Seely: No difference has hitherto been made between officers stationed in various parts of the Kingdom who desire to join the Royal Flying Corps. If it is found that there are special difficulties in the case of any command the matter shall be rectified.

Mr. Amery also asked what accommodation, if any, is being provided in Ireland for the housing of Government aeroplanes?

Colonel Seely: The question of establishing a station for a unit of the Flying Corps in Ireland is now under consideration.

Mr. Amery further asked the Secretary for War, (1) in view of the exceptional opportunities for flying afforded by India and South Africa, if he will state what provision is being made for the training in airmanship of His Majesty's forces in those countries; (2) in view of the importance of securing rapid transmission of information to Government headquarters in case of native risings, if he will state what provision is being made for the supply of aeroplanes and for securing facilities for training in airmanship for His Majesty's forces stationed in British East Africa, Nigeria, and other Crown Colonies; and (3) if he will state how many aeroplanes in the possession of the Imperial military authorities there are at present in India, South Africa, East Africa, West Africa, Egypt, the Soudan, Gibraltar, Malta, Cyprus, Aden, and the West Indies, respectively; how many garages; and what staff for construction or repairs?

Colonel Seely: The Royal Flying Corps has been in existence for only one year and it has not been found possible, even supposing it to be desirable, to extend it to the places named in these questions.

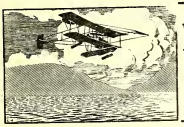
Oral Answers, May 7th, 1913.

Hydro-Aeroplanes.

1. Mr. Burgoyne asked the First Lord of the Admiralty whether the flying machines now generally known as hydro-aeroplanes are to be given an official and less ponderous designation.

The Parliamentary Secretary to the Admiralty (Dr. Mac-

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namara): My right hon. friend would welcome suggested alternatives for the term "hydro-aeroplane."

Mr. Lee: Is not the term commonly used in the Press "water-plane"? Could we not adopt that?

Mr. Burgoyne: Is not an equally common term "flying boat"?

Mr. Swift MacNeill: Could not the right hon. gentleman adopt the name of the hon. gentleman (Mr. Burgoyne) himself?

Dr. Macnamara: I will take note of all these suggestions.

Naval Volunteer Seamen.

3. Mr. Burgoyne asked the right hon. gentleman whether he has received any applications from naval volunteer seamen ratings to undergo instructional courses in flying; whether such applications have been refused; and, if so, will he state the grounds upon which such refusals were based?

Dr. Macnamara: The selection of officers and men for all services connected with the Navy must rest with the Board, and it would not be in the public interest that reasons should be given for selections or rejections.

Naval Flying Wing (Reserve).

4. Mr. Burgoyne asked the right hon. gentleman if it is his intention to create a reserve of personnel for the Naval Flying Wing?

Dr. Macnamara: The answer is in the affirmative. The rules are now under consideration.

16. Colonel Burn asked the Secretary of State for War how many officers of the Royal Flying Corps there are whom he classes as flying officers; and how many men who fly at the present time?

The Secretary of State for War (Colonel Seely): There are 135 officers who have obtained the Royal Aero Club certificate. Of these 82 are fully qualified first-class pilots. Nineteen warrant officers, non-commissioned officers and men belonging to the wing are now undergoing instruction; of these 12 are second-class pilots.

17. Colonel Burn asked how many pilots there are in the Royal Flying Corps who can fly high-powered machines at the rate of 70 miles an hour?

Colonel Seely: It is impossible to say how many officers can fly a machine at the rate of 70 miles an hour, as a considerable number of our machines have a speed of between 60 and 70 miles an hour. It is clearly impossible to say that the officers who are capable of flying these machines are incapable of flying at greater speeds. If information is desired as to the number of officers who have flown machines at 70 miles an hour it can be obtained, but we have never accepted this speed as in any way a standard for military purposes.

18. Mr. Joynson-Hicks asked whether there is yet one single squadron of the Royal Flying Corps equipped with the necessary eighteen effective machines, together with mechanical transport and the necessary accommodation for housing the machines?

Colonel Seely: It is not considered to be in the interests of the Service to publish the information required.

Mr. Joynson-Hicks: Was it in the interests of the public service to state that these squadrons would be efficiently equipped, and, if so, why is it not in the public interest to answer this question?

Colonel Seely: In no other country, so far as I have been able to ascertain, is information given of the precise state of affairs of any branch of the forces, and we do not propose to give such information unless there is very good reason for it.

Mr. Lee: Does the right hon. gentleman still contend that our Army is the best equipped of any Army in the world with regard to these necessities of modern warfare?

Colonel Seely: I do not know that that arises out of this question. I believe we have the best pilots, and I believe in many respects we have some of the best machines. We can hardly discuss it at Question Time.

19. Mr. Joynson-Hicks asked what is the organisation of the Royal Flying Corps as regards its administrative side in the War Office: how many officers are employed in this; and what salaries are paid to them?

Colonel Seely: The work connected with the Corps at the War Office is performed by branches which deal with similar matters for other services. The Secretary of the Flying Corps Committee receives £300 a year.

20, 21 and 30. Mr. Joynson-Hicks asked (1) whether in the list of 101 machines produced to Lord Montagu as being effective aeroplanes, there were included two Avros and two Bréguets which had previously been smashed; (2) how many biplanes and monoplanes, respectively, have been delivered to the Royal Flying Corps since the 19th March last; and (3) whether he will give a Return or list of the 101 effective aeroplanes mentioned to Lord Montagu, stating when and where they were purchased, what was paid for them, and when and by whom they were tested and passed as efficient?

Colonel Seely: I would refer the hon. gentleman to the statement made on the introduction of Army Estimates on 19th March, and replies to subsequent questions on 27th March, and, 16th, 22nd, and 23rd April, to which I have nothing to add.

Mr. Joynson-Hicks: Did not the right hon. gentleman produce, long after the date mentioned, a statement of machines to Lord Montagu, and should not the same information be available to every member of this House?

Colonel Seely: I said, when a similar question was asked me before, that if any responsible gentleman on either side of the House wished to see the document I put before Lord Montagu I should be only too glad to show it him. The difficulty in regard to the hon. gentleman is that nothing that happens seems to have any effect on his belief that I or my advisers are not able to tell him the truth. He is wrong. We are.

27. Sir Philip Magnus asked the Secretary of State for War whether, in view of the arrangements made with the Press whereby the doings of the Royal Flying Corps are not reported in the newspapers, he will explain why it is advisable that the reports recently issued of experiments in connection with artillery fire carried out by officers of No. 3 Squadron, Royal Flying Corps, on Salisbury Plain should have been reported with official sanction or not; whether the names of the officers and the machines flown by them in the course of these experiments have been supplied to the Press officially; and whether he will consider whether it is in the public interest that these doings should be kept as secret as the names of the makers and the respective capabilities of the other machines in possession of the Army?

Colonel Seely: It is presumed that the reports mentioned are those included in the communiqués issued weekly by the War Office on the work of the Royal Flying Corps. These communiqués contain information which it is considered may, with due regard to the interests of the Service, be published.

35. Captain Faber asked how many aeroplanes in the possession of the Royal Flying Corps, exclusive of the Royal Aircraft Factory or the Central Flying School, are able now to meet the specifications laid down eighteen months ago, namely, a minimum speed of 55 miles per hour, a carrying capacity of 350 pounds, in addition to fuel for four and a half hours, a three hours' flight at a height of 4,500 feet with the above load, and a climbing speed of 200 feet a minute fully loaded; and if he will state the equivalent number on 19th March of this year?

Colonel Seely: The conditions stated in the question are not those on which aeroplanes have been or are being ordered.

Effective Machines.

22. Mr. Joynson-Hicks asked the Secretary of State for War whether, having regard to the improvements in aeroplanes during the last few months, he will be prepared to raise the standard of effectiveness suggested by the hon. Member for Brentford as ability to fly at 50 miles an hour at a height of 3,000 feet, to 75 miles an hour at a height of 5,000 feet; and, if so, how many effective machines on this basis he now has?

Colonel Seely: It is not proposed to accept either of those standards of effectiveness, which have no relation to requirements for military purposes.

24. Mr. Sandys asked how many Blériot monoplanes, Bristol monoplanes, Deperdussin monoplanes, Flanders mono-

planes, Nieuport monoplanes, and Martin Handasyde monoplanes were included in Lord Montagu's list of 101 effective machines; and, if so, how many of those, respectively, are not being used at the present time?

26. Sir Philip Magnus asked whether it can be stated when the monoplanes at present in the possession of the Army and stored at the Royal Aircraft Factory will be put in flying order; whether this is to be done by the staff of the Royal Aircraft Factory or by the makers of the aeroplanes, and, if the latter, when the orders for the alterations are to be given out; and whether it is in the public interest that these machines should have been allowed to remain useless for the past five months since the Monoplane Committee completed its Report?

Colonel Seely: Twenty-eight monoplanes were in possession on 19th March of this year. I am informed that all of these were capable of being flown, but were not being used pending final consideration of the Report of the Monoplane Accidents Committee. A small number of these machines are now considered to comply with the requirements of safety, and the remainder will be reconstructed.

Mr. Lee: When does the right hon. gentleman expect the Report to be completed?

Colonel Seely: I think we may say it is now completed. We have made up our minds as to how far it is necessary in the interests of safety to accept the full recommendations of the Monoplane Committee.

Mr. Joynson-Hicks: The hon. member (Mr. Sandy's) question relates to Lord Montagu's list of 19th March.

Colonel Seely: I do not know what is meant by Lord Montagu's list. What happened was that Lord Montagu fell into the error of thinking that my advisers had given me wrong information. I asked him to come to the War Office, and gave him all the documents put before me from day to day. He immediately apologised for having made an erroneous statement. I do not know what is meant by his list. I showed him all the papers.

B.E. Biplanes.

23. Mr. Sandys asked how many B.E. biplanes have been built in the Royal Aircraft Factory, and how many of those are to-day available for flying?

Colonel Seely: In addition to experimental machines three B.E.2 biplanes have been constructed for the Army and are available for flying. Two similar machines have also been constructed for the Navy.

Military Airmen.

31. Mr. Amery asked the Secretary of State for War how many of the aeroplanes owned by the War Office are of variable speed; how many are two or three seaters, with arrangements for dual control; and how many are fitted with automatic telephoto apparatus and how many with wireless telegraphy apparatus, respectively?

Colonel Seely: All aeroplanes are capable of some variation in speed. As regards the other points raised in the question, it is not considered to be in the interest of the Service to publish the required information.

32. Mr. Amery asked what steps, if any, are being taken to provide special maps of the United Kingdom, the adjacent portions of the Continent, and also other parts of the British Empire, for the use of military airmen?

Colonel Seely: Special maps were prepared for last year's manœuvres, and other specially prepared specimens have been under consideration; experience tends to show, however, that ordinary maps are suitable for the use of airmen.

Aeroplane Repair Vans.

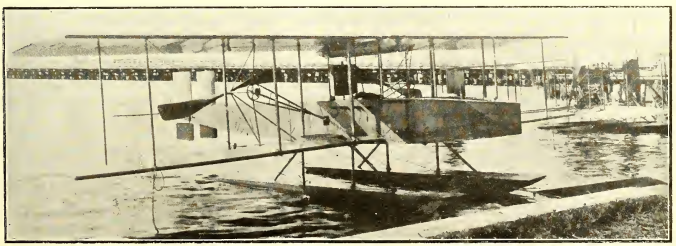
33. Mr. Amery asked if the War Office is in possession of any aeroplane repair vans; and, if so, where these are stationed?

Colonel Seely: Yes, sir. They are now being fitted out in the ordnance factory.

A Point on Wing Breakages.

Professor Joseph Petavel, M.Sc., F.R.S., has of late delivered a series of three lectures on "Aeronautics" to the Royal Society of Arts. The lectures may best be described as dealing with the elementary science of aeronautics, and touched on the general laws of aerodynamics, the distribution of pressure on surfaces, lift and efficiency of wings, and resistance of spars and struts. They were illustrated by a number of model showing in solid form the curves of pressure under and on top of wings.

In this connection the lecturer brought out an interesting point which may account for the breakage of wings on certain monoplanes, for the curves illustrated on the models shown demonstrated that almost the maximum suction on the top of a wing, which is much greater than the pressure underneath, takes place at the rear of the extreme tip, this effect being apparently particularly marked in wings with square ends. The reason for this constant high strain is apparently that the streams of air escaping at the end of the wing and at the back of the wing at the same time set up an eddy over the top surface of the corner which attains to great strength. As this particular portion of the wing is undoubtedly the weakest in all machines except in those biplanes where the end strut is connected at this particular point, it suggests that designers should investigate this phenomenon with extreme care, and that extensive experiments should be tried by the Royal Aircraft Factory and the National Physical Laboratory and published as soon as possible for the benefit of all interested in aviation. It will be obvious that with excessive warp suddenly applied the strain will increase.



The latest Burgess Coast Defence Hydro-aeroplane. **(Described on p. 560.)**

Liverpool Shows the Way

On May 7th a crowded meeting, numbering some 3,000 people, took place in Liverpool Town Hall, under the presidency of the Lord Mayor, for the purpose of transforming the Liverpool Volunteer Flying Corps from a possibility into a concrete fact. The serious spirit in which this enterprise is regarded by the citizens of Liverpool may be gathered by reading over the list of those who attended, which includes, among other notable names, the following:—Colonel Allender, Colonel Melly, Sir Charles Petrie, Alderman Maxwell, Mr. Charles Lancaster, Alderman Salvidge, Alderman Cohen, Sir Thomas Hughes, Alderman Shelmerdine, Alderman Radcliffe, Alderman Crosthwaite, Mr. T. O. Ockleston, Mr. F. C. Danson, Councillors A. L. R. Rathbone, Max Muspratt, Dr. Utting, J. Bowler, R. Rutherford, W. J. Burgess, J. Sexton, the Rev. J. M'Kinney, the Rev. Stanley Rogers, Pastor George Wise, and Mr. Julius Jacobs.

The Lord Mayor was accompanied on the platform by Major Sykes, Commandant, R.F.C. Military Wing, who was present on behalf of the War Office. An imposing list of names figured amongst the apologies for unavoidable absence, including those of Lord Roberts, Colonel Seely, Lord Derby, Mr. William Cain, Mr. Charles A. Cain, Mr. Joynson-Hicks, M.P., Colonel Kyffin Taylor, the Hon. Arthur Stanley, M.P., Mr. Watson Rutherford, M.P., Mr. T. P. O'Connor, M.P. (who sent a letter cordially commending the movement), Mr. Leslie Scott, M.P., Mr. Alfred Bigland, M.P., Mr. Harold Smith, M.P., Mr. Grahame-White, and Mr. Stuart Deacon, who sent a cheque from himself and Mrs. Stuart Deacon for five guineas.

The Lord Mayor in his opening remarks, referred to this country's weakness in aviation, and the need that she should be as strong in the air as on the sea. He expressed his gratification at such a largely attended meeting, and alluded to the patriotic and munificent offer of aeroplanes by Messrs. Cain. Referring to the recent Mansion House meeting in London, his Lordship pointed out the difference in the two standpoints; they in Liverpool were approaching the subject not with the idea of urging the national Government to take action, but with the idea of forming a voluntary association supplemental to the official provision for aerial defence. He was gratified at the communication from Colonel Seely, whose letter he proceeded to read as follows:—

"My Dear Lord Mayor,—

"I am much obliged for your effort. Major Sykes, the commandant of the military wing of the Royal Flying Corps, is himself bringing this letter, and will be glad to give the benefit of all his knowledge of the subject which you are discussing at your meeting to-day. May I first say that we appreciate most highly the patriotic spirit which has prompted the citizens of Liverpool in putting forward the proposal which you sent to me in your letter.

"We have had many offers from various quarters, and after full consideration by the Air Committee, which is a sub-committee of the Committee of Imperial Defence, the general lines on which we usually reply are as follows:—With regard to personnel, the established principle is—and I think you will agree with me it is a wise one—that those who wish to serve their country in the science of military and naval aviation should become members of the Royal Flying Corps.

"This corps is open not only to officers and men in the Regular Army and Navy, in the Special Reserve and the Territorial Forces, but also to civilians. In our view it would be a great mistake to establish local corps apart from the central organisation, the services of whose members will be of such inestimable value to the State in any part of the world in time of war. With regard to the material, it is not possible for us, in the interest of the public service, to accept gifts of aeroplanes or airships to which restricted conditions are attached. After consultation with Major Sykes, I think you will probably agree that this view is sound.

"It has occurred to me, however, that the offer of Liverpool is so exceptional in view of the great importance of your city that you might possibly wish to make some large and substantial contribution to our aerial defence. The complete equipment of a squadron of the Royal Flying Corps, including 18 aeroplanes, their transport, and other accessories, amounts to close on £40,000. It may be that you will think that such a sum is prohibitive by its magnitude, or that your meeting could not see its way to adopt this particular suggestion, but if it were possible it would be a splendid gift, worthy of the great city over which you preside, and would be given in a form which would be of the greatest value to the State.

"Major Sykes, whose knowledge on these questions is, of course, exceptional, will be able to explain to you the special reasons which make it undesirable to have local corps in the aeronautical service, and will be able to elucidate any point on which you may be desirous of having further information. With my renewed acknowledgments, my dear Lord Mayor, of the patriotic spirit of the citizens of Liverpool in making the offer, believe me to be, yours very truly,

"John Bernard Seely."

That appeal by Colonel Seely, his Lordship observed, was one which he hoped they were going to answer successfully. Liverpool had, he thought, greater interest in seeing that commerce was preserved than any other city in Great Britain. They knew that this great new force had come into existence, and there in Liverpool, with their enterprise, they should put it forward, and in no way dwarf or minimise it. In the



A Burgess Flying Boat (70-h.p. Renault engine) supplied to the U.S. Navy. **For description see page 560.**

science of aviation he was proud they in Liverpool were taking the lead. They were always patriots in Liverpool, and he hoped that meeting would establish such a committee and raise such funds as would show that Liverpool had done its duty.

Sir Charles Petrie moved the following resolution :—

"That this meeting of the citizens of Liverpool, recognising the urgent need for adequate aerial defence, cordially approves the movement for the establishment of a Flying Corps to be associated with the city."

Liverpool had been a pioneer in many good causes, and had never been lacking in patriotism. They were anxious to assist the Government and the War Office in the matter of aviation in every way possible. Therefore, with that object in view they had to think of what was best for our country, and he was glad to think that there was no political feeling in that meeting; any taint of political feeling would probably kill the whole scheme.

Little, if anything, he said, had yet been done in Great Britain by voluntary action to strengthen the national defence in the matter of aviation. He pointed out that in France and Germany great sums of public money raised by voluntary subscription had been used to that purpose.

The proposal to create a Liverpool Flying Corps was intended not merely to safeguard Liverpool from airship attack in war time, but was intended first as a patriotic and a national enterprise, and, secondly, to give a lead to other large towns to inaugurate throughout the country local schemes for supplementing the efforts of the War Office and the Admiralty.

The motion was seconded by Mr. Max Muspratt, C.C., who emphasised the necessity of good relations between Government and those who were controlling voluntary effort.

Professor W. H. Watkinson spoke for the engineering faculty of Liverpool University. He referred to the excellent work being done in the neighbourhood by Mr. Melly and others and pointed to the fact that nine of the engineering students had already volunteered for service in the proposed corps.

Major Sykes explained the lines upon which, he said, it had been thought during the past year that the Flying Corps for service both with the Navy and the Army should be organised. This was no question of voluntary effort versus Government effort, or of Government effort versus voluntary effort, but of co-ordinating the whole thing so as to get the greatest value out of the strength available, whether in men or money. At the present time we were a long way behind France in the matter of aeroplanes and Germany in airships, and the advance on all lines had been so great recently that they wanted to work out every scheme of defence that offered. They wanted a definite nucleus of service which could be called upon for war anywhere; they wanted combined effort to develop all the existing lines, so as to see in which direction it was best that they should concentrate upon; and, as a third line of action, he submitted that there should be purely scientific experimental work. The science of war was becoming more specialised than it used to be, and he urged that in military aviation specialisation was especially necessary.

Mr. H. G. Melly, the notable Liverpool aviator, also spoke to the resolution, and congratulated Messrs. Cain on their very generous offer, and the support which had been given them by that meeting.

The resolution was carried unanimously.

The Flying Corps then took actual form by the carrying of a further resolution, moved by Sir Thomas Hughes, that the Hon. Arthur Stanley, M.P., be invited to become the first president and the Lord Mayor the chairman, and that a distinguished list of gentlemen should form the committee.

The meeting heard with applause that the Hon. Arthur Stanley had signified his willingness to be the president of the corps, and there was much enthusiasm at the adoption of the resolution which formally constituted the corps. And then the Lord Mayor reminded Liverpool that money was part of the scheme and there was such a need as funds.

The Lord Mayor, at a meeting on the 8th of the committee appointed to establish the flying corps, stated that they should disabuse their minds of any idea of going in for the very ambitious project suggested by Colonel Seely—namely, that they should furnish a squadron of the Royal Flying Corps at a cost of £40,000. Several speakers advocated the corps being a local one and not in connection with the Royal Flying Corps, as suggested by Colonel Seely, and the Lord Mayor said it was clear from Colonel Seely's letter to the town's meeting that he wanted this gift to the Army to be used for their own purposes. He (the Lord Mayor) was quite sure that that was not the wish of Liverpool.

Save Us From Our Friends.

The following gem of rhetoric is taken from the "Morning Post's" report of Colonel Seely's speech at the Royal Academy banquet on May 3rd :—

"But besides the horse, foot, and artillery of ancient day, there was yet another Service—the Air Service. On behalf of the Royal Flying Corps might he return to the President of the Royal Academy their grateful thanks for the signal honour paid to that branch by the invitation of two officers, one from the Army and one from the Navy of his Majesty's forces—a signal honour which they would agree was thoroughly deserved. (Cheers.) As he looked round those walls he saw the picture of the battleship, he saw the picture of the gallant charger, he saw the picture of the defence of a fortress in days gone by—but he did not see the representation of one single aeroplane. (Laughter.) He did not know why that was. Was it because they had not enough models for their artists? Or was it because they were afraid he might take it away to count it as one more—to add to what some thought was a rather exiguous total? (Laughter.) Or was it, and he believed that was the true reason, that, all unconsciously, they possibly were pursuing art and beauty so that the new engine was inimical of art? For if that went on there could be no doubt that we should again revert to the practice of our ancestors who dwelt in caves. It was quite true that the modern battleship was not as beautiful as the old "Victory." It was quite true that the modern aeroplane, and still more, or still less, the modern dirigible was not a thing of beauty to represent upon a canvas. But art came in the recognition of the fact that the aspirations of the men who fulfilled the duty of airmen were beautiful, and it was peculiarly fitting that two junior but distinguished officers who represented that new arm should have been invited to attend that banquet. There might be nothing very beautiful in the aeroplane or in the costume of the man who climbed into it and invaded the air, but no knight in armour of olden days, no soldier of our glorious past, no man who had led a great charge of victory had a more beautiful soul to paint than the men who dared the most dangerous thing in the world—the glories of the air."

It is to be hoped that their dinners still agreed with the two "junior but distinguished officers" after this. One wonders whether Colonel Seely has ever read Mr. Kipling's story in "Stalky and Co.," of the M.P. who lectured the school on patriotism and was known as the adjectived "flag-flapper." The speech would come rather well from a colonel of Girl Scouts.

From the Balkans.

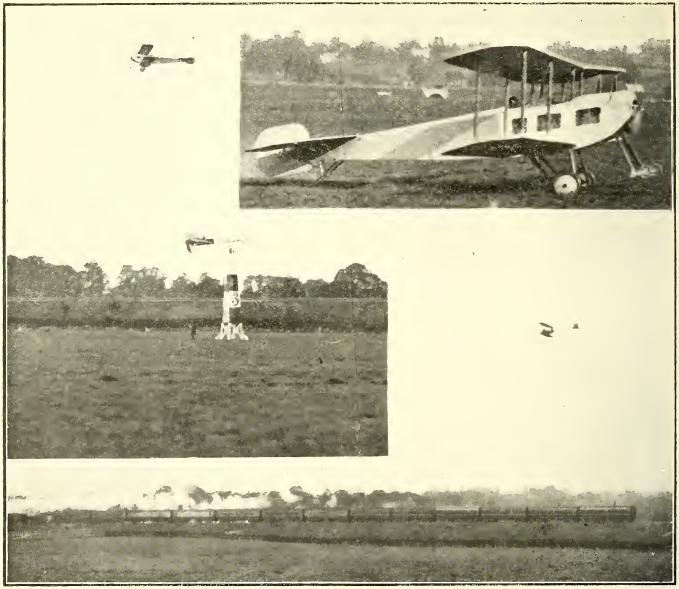
Mr. Dukinfield Jones sends a postcard he has just received from Mr. Sabelli, who writes from the Headquarters, 3rd Squadron of Aeroplanes, Kavak (Bulair), Bulgaric. Mr. Sabelli wrote in French so that the card might the more easily pass the censors. He says :—"I have the honour to tell you that I am not yet dead, although I have covered on the tandem Blériot nearly 1,500 kilometres (900 miles) over the Peninsula of Gallipoli, the Sea of Marmora, and the Gulf of Xaros. The 70-h.p. Gnome with the new valves is extraordinary, not a single trouble, not even a plug. We have taken it down twice to clean it, that is all. Give my kind regards to Hedley and everybody. Hope to see you soon.—SABELLI."

"The Britannia Trophy."

(Under the Competition Rules of the Royal Aero Club.)

Mr. H. Barber has presented to the Royal Aero Club for competition a Trophy to be known as "The Britannia Trophy." The rules for the competition will be issued shortly.

The Great Whitsun Meeting.



WHIT-SATURDAY AT HENDON:—On the left Mr. Hawker and Mr. Slack passing Pylon 3. On the right Mr. Hawker is seen landing on the Sopwith biplane after winning the Altitude Prize. Below Mr. Turner is seen catching a train.

Never in this country has man's conquest of the air been so well demonstrated as at Hendon during the Whitsun holidays, for, despite the weather, the flying every day was magnificent.

On Saturday, after a promising morning, an attempt was made by means of a cleverly-timed rainstorm, to discourage the "gate" before it had left London. The attempt failed, and—fortunately for its optimism—the aforesaid gate, which was large, experienced no further difficulty with the weather.

Two interesting events were flown, an altitude contest and a speed handicap. For the first, there were five starters, Mr. Hamel in a 50-h.p. Gnome Blériot, M. Verrier in a 70-h.p. Renault Maurice Farman, Mr. Slack in a 50-h.p. Gnome Blériot, Mr. Brock in a 35-h.p. Anzani Deperdussin, Mr. Hawker in an 80-h.p. Gnome tractor 3-seated Sopwith biplane, which he had flown from Farnborough in the morning. This last machine climbed with astonishing speed, quickly outclimbing the other four contestants, but at 7,400 feet, having been lost in the clouds for some considerable time, Mr. Hawker thought it wiser to descend while he was still reasonably sure of being in the neighbourhood of Great Britain. When he landed he found himself at Ponder's End, whence he returned to the aerodrome after asking his way.

Mr. Hamel retired, as his barograph failed to act properly, though he obviously exceeded 6,000 feet. M. Verrier reached a height of 4,450 feet. Next came Mr. Brock with 4,300 ft. to his credit, a marvellous feat with only 35-h.p., and then Mr. Slack with 4,000 feet. Probably no other English aerodrome has ever before seen five machines all up over 4,000 feet at once.

The speed handicap was flown in two 4-lap heats and a 6-lap final. In the first heat Lieut. Porte, R.N., in a 100-h.p. Anzani Deperdussin, which is terrifically fast, started scratch and finished first, with M. Verrier second from a start of 48 secs. Mr. Hamel again withdrew after being passed in the second heat. Mr. Hawker started scratch and finished third; Mr. Slack, with a start of 55 secs finished second, and Mr. Lewis F. Turner on a 60-h.p. Anzani Caudron biplane, with a start of 1 min 57 secs finished first. The final, then, was between Mr. Turner, with 2 mins 21 secs start, Mr. Slack with 1 min 18 secs start, Lieut. Porte scratch, and M. Verrier with 1 min 8 secs start, and they finished in the order named, after a very fine race.

The rest of the day was taken up with passenger and exhibition flying, Sig. Nardini appearing on his 50-h.p. Gnome Deperdussin, and M. Beaumann on a 35 h.p. Anzani Caudron, giving a very fine performance. Much amusement was caused

by Mr. Grahame-White becoming a pupil and being taught by M. Verrier how to fly the new Maurice Farman the Grahame-White Company have bought. His apprenticeship lasted nearly five minutes. Mr. Slack flew the 50-h.p. Blériot to Brooklands for Mr. Hamel, and Mr. Hawker took the Sopwith home there.

There was some disappointment caused by the Cross-country Race being put off owing to lack of entries, though four starters were ready to go, but the crowd had very good value for their money without it.

On Sunday all the pilots who flew on Saturday were out again, plus Mr. Louis Noel, who came out as a Maurice Farman pilot. Mr. Grahame-White flew over to tea with some theatrical friends at Elstree and brought back a lady passenger, and later took up the Duchess of Sutherland. Signor Nardini on his renovated "Dep" flew very well indeed. Mr. Hamel went to Brooklands by car, gave his usual show there, and flew Mr. Slack's Blériot back, his own machine having gone to Stoke for exhibitions on Monday. The event of the day, however, was the arrival of M. Brindejonc des Moulinais from Belgium, where he had landed on Saturday on his way from Bremen. He came up river from Dover and turned North over Hyde Park, not knowing his proper course, thus unwittingly infringing all our beautiful air laws, as well as falling foul of the Royal Aero Club rule against flying over towns. The little Morane-Saulnier gave the impression of terrific speed, which was confirmed next day.

The Bank Holiday Show.

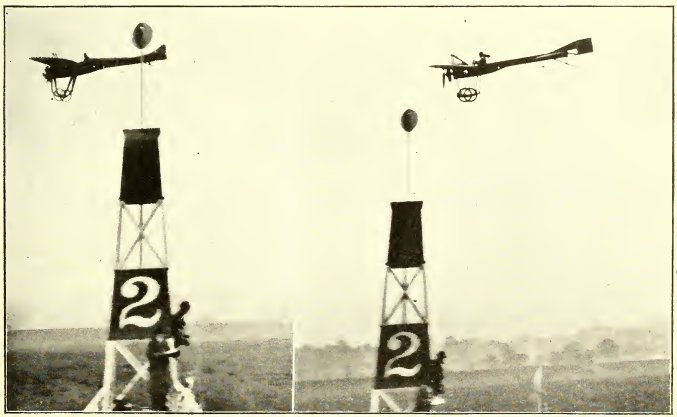
Bank Holiday brought something well over 20,000 people to the Aerodrome despite the wet and wind, and those people saw some of the finest flying that has ever been done in England. When one looks back a little and realises that no one would have thought of flying on such a day a year or so ago, one sees the progress that is being made. Also, it may be well to point out that flying was in progress all day while cricket matches all over the country were being abandoned or dragging slowly along between the showers. The papers report 40,000 people at Hendon and 3,000 at Lord's, for a county match. There is still hope for this country.

The first competition was one for bomb-dropping. This was won by Mr. Lewis Turner (60-h.p. Caudron) with an average of 36ft. 8 in. for his three shots. Mr. Noel (70-h.p. M Farman) was second with 76 ft. 4 in. average, Mr. Slack (50-h.p. Blériot) third with 85 ft. 6 in., M. Verrier (70-h.p. Farman) 127 ft. 4 in., and Mr. Brock last with 134 ft. 6 in. All except Mr. Brock dropped their bombs from less than the regulation 300 ft., and Mr. Brock omitted to fly a clear lap before dropping his first bomb, so that strictly speaking they should all have been disqualified.

The first race was for the Giesler Trophy and 100 guineas in cash. The course measured about 29½ miles, to Elstree and back three times, and resulted in a sensational win for M. Brindejonc, who gave Mr. Brock on the little 35 h.p. Deperdussin 13 mins 18 secs start and beat him by 2 mins 16 secs. The result was as follows:—

M. Brindejonc (80 h.p. Morane-Saulnier) scratch, handicap flying time, 37 mins 11 secs	1
H. M. Brock (35 h.p. Deperdussin) 13 mins 18 secs, handicap flying time, 39 mins 27 secs	2
P. Verrier (70-h.p. Maurice Farman) 7 mins 25 secs, handicap flying time, 40 mins 18 secs	3
R. Slack (50-h.p. Blériot) 6 mins 22 secs, handicap flying time, 40 mins 31 secs	4
L. Noel (70-h.p. Maurice Farman) 7 mins 16 secs, handicap flying time, 42 mins 50 secs	5
L. Turner (60-h.p. Caudron) 9 mins 7 secs (retired)	6
J. Nardini (50-h.p. Deperdussin) 4 mins 35 secs (retired)	7
Lieut. Porte, R.N., (100-h.p. Deperdussin) 2 mins (retired)	8

Deducting the handicap time, M. Brindejonc took 23 mins 53 secs to cover 29½ miles, over an out and home course, and most of it in rain, which was quite heavy enough to be very painful even on a slow machine, so under favourable conditions the speed of the machine cannot be under 80 miles an hour in still air. The rain stopped Mr. Turner and Sig. Nardini. Lieut. Porte was wearing a pair of goggles with padded edges which fogged up as soon as he started, and as he could see absolutely nothing with them on he had to take



On the left Lieut. Porte, R.N., on the 100-h.p. Deperdussin, and on the right Sig. Nardini on the 50-h.p. Deperdussin at the first turn in the Giesler Cup race.

them off, when he found that rain driven back by a ninety-mile-an-hour slip-stream was rather too much even for a hardened sailor man.

The speed race resulted thus :—

L. Turner, 35 h.p. Caudron, 35 sec., handicap flying time, 7 min 11 sec 1

L. Noel, 70 h.p. Maurice Farman, 15 sec. handicap flying time, 7 min 15 sec 2

P. Verrier, 70 h.p. Maurice Farman, scratch, handicap flying time, 7 min 19 sec 3

R. Slack, 50 h.p. Blériot, 2 sec, handicap flying time, 7 min 20 sec 4

It was no mean feat of handicapping to get four men inside nine seconds, but, of course, the competitors were not satisfied. M. Verrier was particularly annoyed, because M. Noel's machine is supposed to be faster than his, though the fact that he got within four seconds of M. Noel after flying nearly all the way in Mr. Slack's backwash, shows that the handicappers were not far out in their reckoning. In the first heat of this race Verrier, Turner, Brock, and Brindejonc finished close together in that order, though Brindejonc started 28 seconds late, owing to his engine refusing to start. The handicappers have not yet got the full measure of his speed. In the second heat the order was Messrs. Noel, Slack, and Nardini.

Altogether it was a great day, despite the depressing weather, and I believe the crowd appreciated the fact. It came near being deprived of its star turn, for a letter arrived from the Royal Aero Club office saying that M. Brindejonc's certificate had been withdrawn on account of his flying over London, and he was ineligible to compete. However, the stewards of the meeting held that in the first place the committee of the R.Ae.C. would have to sit on the case, and that he could not be condemned unheard by the officials of the club acting without the instructions of the committee, and anyhow, it seems to have been forgotten that M. Brindejonc holds a French certificate, which can only be suspended by the French club, and that the only thing the English club can do is to send a request to the French club that they will suspend it. I think all good sportsmen will agree with the stewards.

When a man flies some 500 miles to compete at a meeting one is not going to have him barred at the last moment for a technical infringement of a law. The rule against flying over towns was intended for incompetent asses who land on housetops, not for men of M. Brindejonc's class, who fly at 5,000 feet or so, and can land on a table-cloth.

Mr. Brindejonc's flying is a thing to marvel at, even allowing that he has the best machine of its type ever seen at Hendon. Apparently the Morane has no inherent stability at all, but it is so wonderfully quick on its controls that so long as the pilot keeps his head he can make it do anything. It is worth noting that it reverses Nieuport practice exactly. The top and bottom of the fuselage taper to a line along which the elevator tube is fixed, but the sides remain almost parallel from engine to tail. Thus the side area is small, and the top area is large. The latter, presumably, acts as an empennage, for the whole tail consists of a heavily-balanced elevator on each side of the fuselage. The rudder also has a big area in front of its axis. The wings are wider in span at the rear than in front, so that all the surfaces are simply huge controls. It is a beautiful machine for a first-class pilot, but not for the average man who has scrambled through his certificate tests on a box-kite.

The other hero of the day was Mr. Brock, the American light-weight pilot, whose flying of the little 35-h.p. "Dep." was a revelation to most people. I still think that Mr. Brock is inclined to be rash in his choice of weather, but I must admit that he is safer on his "35 Dep." in a gale than many men on box-kites are in calms. A man who can stand forty minutes of rain and wind combined, as he did on Monday, is "some flier"—as his compatriots would say. His winning of second place in the Giesler Cup race was immensely popular, and he was chaired in triumph to the enclosure, where M. Forestier was dispensing Giesler's products to the competitors. As a tribute to his nationality someone promised Mr. Brock a whole new packet of chewing-gum, as an additional reward for his prowess.

Taking it all round the Whitsun meeting was instructive and entertaining, and if only the weather had been moderately decent, all previous records for attendance would have been pulverised. Even as it was, the overflow enclosures had to be opened. The new refreshment bungalows and the extended stands in all the enclosures are greatly appreciated, and one may console the grumblers with the advice that when the caterers have had time to gauge the capacities of aeronautical appetites, this department will also improve. And, one may warn the caterers that this is going to be a boom year at Hendon. The public is beginning to take an interest in flying, and when the British lion is aroused his appetite is enormous.

After the meeting, the pilots and some friends were entertained by M. Forestier, of Giesler's, at Oddenino's, when the cup and accompanying cheque were presented to M. Brindejonc.—C. G. G.

Competition at Brooklands.

The Whitsun Aeroplane Handicap at Brooklands took place as announced on Monday, in spite of gusty wind and more or less continuous rain. There were three starters : Mr. J. Alcock, on Mr. M. Ducrocq's ancient Farman with a 50-h.p. Gnome, Mr. Gordon Bell on a 120-h.p. Austrian Daimler Martin Handasyde monoplane, and Mr. H. G. Hawker on the 80-h.p. Gnome-Sopwith tractor. The ancient one received a start of 7 mins. 37 secs., but Mr. Alcock, having received several nasty jars at 50 feet before he had crossed the aerodrome, came to the conclusion that it was not sufficiently good, and came down; thus the race was between the Sopwith biplane and the Martin Handasyde mono, the latter conceeding 1 min. 18 secs. to the latter. The biplane rose with its usual but none the less astonishing suddenness, and gave one the impression that it needed no start. When the monoplane went up there seemed very little to choose between the two for speed.

The race consisted of two journeys three miles out to northward and home. Both machines behaved admirably in the treacherous air. The Sopwith biplane won by 39 secs.

Mr. Pickles at Winchester.

On Saturday Mr. Sidney Pickles, on the Handley Page monoplane, left Hendon at 6.30 in the morning for Winchester. He stopped at Brooklands and Farnborough on the way and arrived at his destination at 8.15 a.m. In the afternoon he gave a series of exhibition flights on the polo ground, a large crowd showing deep interest in the evolutions of the machine. On Monday the rain fell until evening, when he again made a few flights.

Aviation at Brighton.

The Radley-England waterplane has not been up this week, chiefly owing to a faulty propeller, that is being replaced. The mudbanks, unfavourable winds, and Mr. Radley's short visit to Huntingdon are the other causes that have delayed the Brighton flight, which will take place at the first opportunity.

It should now be at Brighton in the shed erected for it by Messrs. Volk near Paston Place Station on their electric railway. During the next fortnight—weather and circumstances permitting—flights will take place daily from the Paston Place hangar, which is easily reached by electric car from the Aquarium.

A 100-h.p. Avro waterplane is also expected to arrive by rail from Manchester in a fortnight's time. This will be piloted by a mysterious anonymous who, for the nonce, will navigate under the "nom de l'air" of "Captain X." This pilot intends to conclude his Brighton engagement with a flight to Hamburg. Messrs. Volk hope to make arrangements for several other well-known aviators to appear at Brighton during the season. The preparations at Paston Place include not only the hangar, which measures 52 ft. by 40 ft., but also a slipway and turntable which will greatly facilitate the shore work.

Mr. Pashley, of Humber fame, has arrived at Shoreham. He spent Friday and Saturday assembling a new Blondeau-Hewlett Farman. A reliable source states that the Blondeau and Hewlett firm have at least a machine a week to deliver for a whole year. The majority, if not all, are for the War Office, so perhaps the campaign of THE AEROPLANE for adequate aerial defence is bearing fruit.



BANK HOLIDAY AT HENDON:—Above M. Brindejonc is seen starting. On the left is Mr. Brock finishing in the Geisler Cup race. On the right M. Brindejonc is shown in various attitudes, and below he is shown as he arrived at Hendon from Brussels. (The last photograph is by the Topical Postcard Co.)

The Week's Work.

MONDAY, May 5th.

R.F.C., Farnborough.—On Maurice Farman 307, Capt. Reynolds 10 mins, Capt. Reynolds with Lieut. Atkinson 10 mins, Lieut. Holt 20 mins, Capt. Reynolds with Capt. Cowan 10 mins. On B.E. 201, Capt. Fox 10 mins, Major Raleigh 10 mins, Capt. Webb-Bowen 15 mins. On Bréguet Sergt. Hunter 8 mins, Lieut. Chinnery 22 mins, Lieut. Playfair 14 mins, Lieut. Playfair with Lieut. Boyle 6 mins, Sergt. Hunter with Lieut. Thompson 9 mins, Sergt. Hunter with A.M. MacFarland 5 mins, Capt. Beor 11 mins, Capt. Sheppard with Lieut Soames 28 mins, Sergt. Hunter with Lieut. Thompson 23 mins, Lieut. Chinnery 7 mins.

R.F.C., Montrose.—Capt. Herbert with Lieut. McLean on Maurice Farman 207 flight to Cruden Bay. Fog encountered 12 miles north of Aberdeen, and descent for bearings. On reascending the engine began to give trouble and second descent was made 7 miles west of Aberdeen. In trying to reascend the machine struck a wall and smashed left plane. Crew escaped unhurt. Capt. Longcroft on B.E. machine with Sergt. Tucker as observer local flight. Flying stopped owing to fog.

R.F.C., Lark Hill.—On Maurice Farman 216, Sergt. Ridd 20 mins with A. M. Hobby for instruction. On Henry Farman 274 Lieut. Cholmondeley twelve flights, 10 mins with A.M. Mitchell, 14 mins with A.M. Miles, 7 mins with Capt. Dayley, 10 mins with Capt Beatty, 14 mins with Capt. Napier, 11 mins with Capt. Richards, 10 mins with Boy Eley, 11 mins with A.M. Aylen, 5 mins with A.M. Austin, 7 mins with A.M. Dunville, 10 mins with A.M. Goddard and 15 mins alone. On Henry Farman 275 Lieut. Carmichael 16 mins with A.M. Whenham, 10 mins with A.M. Dewsbury, and 30 mins. alone. Lieut. Burroughs 14 mins and 7 mins. On Henry Farman 277 Lieut. Roupell 15 mins with A.M. Foley and 8 mins alone, Lieut. Allen 15 mins with Capt. A. H. Burns, R.H.A., 18 mins with Lieut. Harbord and 10 mins with A.M. Doyle On Maurice Farman 269 Lieut. Ashton 1 hr 5 mins with A.M. Hobby for instruction.

Hendon.—At Grahame-White School, Mr. Bayetto, 5.35 p.m., on No. 2 B., circuits and 8's. Mr. Manton on same.

At W. H. Ewen School, pupils out at 4.50 p.m. under Mr. L. Turner and M. Baumann. Mr. L. Turner test on No. 1 Caudron. Messrs. Zubiaga and Warren half circuits. Lieut. G Adams circuits, and Mr. Prosser straights. Mr. Turner on 60-h.p. Caudron alone and with passengers. M. Baumann test on 35-h.p. Caudron No. 2. Lieut. U. C. Hicks and Messrs. Goodden, Gist, McGregor and Cowling straights.

At Deperdussin School, Lieut. Bourke, 5 p.m., straights and circuit on No. 3. Mr. Barron and Mr. Hudson circuits. Mr. Whitehouse to Elstree and back on Handley Page mono.

Brooklands.—At Flanders School, Mr. Dukinfield-Jones straights and circuits for ½ hour. Mr. Layzell-Apps rolling and straights. Mr. Dukinfield-Jones again 20 mins, to 600 ft.

At Bristol School, Mr. Merriam testing with Lieut. Duncan; with same pupil for straights. Took pupil cross-country to Chertsey and back. Major Merrick made first straights.

At Vickers School, In afternoon Mr Knight testing biplane, then with Mr. Mitchell. Mr. Orr Paterson circuits; Mr. Knight testing No. 5 mono, then Mr. Waterfall circuits at 1,500 ft. Mr. Mitchell and Mr. Orr Paterson alternately on biplane, Mr. Knight testing air, after which Mr. Andreas for brevet on biplane, with good banked turns and excellent landings. Messrs. Mitchell and Orr Paterson circuits on biplane. Mr. Waterfall with passenger on biplane, Mr. Andreas then on to No. 3 mono straights with Mr. Knight in instructor's seat, afterwards Mr. Andreas straights alone.

Salisbury Plain (Bristol School).—Lieut. Brodribb, R.N., alone, and Mr. Pixton tuition to Lieut. Burns and Mr. Garnet on biplane.

Brighton-Shoreham.—At Avro School, Mr. Raynham ½ hour on 35-h.p. Green Avro. Afterwards Mr. Rolshoven straights.

Windermere.—Mr. Trotter flying well on Mr. Gnosspelius's hydromonoplane. New type float a great success.

TUESDAY, May 6th.

R.F.C., Farnborough.—On Bréguet, Capt. Sheppard 7 mins; Capt. Beor 4 mins; Lieut. Chinnery 15 mins; Sergt. Hunter with A. M. Weldon 5 mins; Lieut. Chinnery 8 mins; Major Raleigh 10 mins.

R.F.C., Montrose.—Damaged Maurice Farman at Aberdeen dismantled and transported to Panmure Barracks for repairs. No more flying for week owing to want of machines.

R.F.C., Lark Hill.—On Maurice Farman 216, Lieut. Cholmondeley 10 mins with an officer of H.A.C. and 10 mins with A. M. Pratt. Capt. Conner 10 mins with Sergt. Keegan. On Maurice Farman 269 Lieut. Ashton 15 mins and with A. M. Hobby. On Henry Farman 274 Lieut. Cholmondeley 73 mins. On Henry Farman 275 Lieut. Carmichael 15 mins and endurance test of 1 hour 10 mins. On Henry Farman 277 Lieut. Roupell 8 mins with Pte. Fairlow 11 mins with A. M. Burton 13 mins with Capt. Davies and 15 mins alone.

Hendon.—At Grahame-White School, 6.15 p.m., Mr. Manton on No. 2 Blériot. Mr. R. H. Carr circuits on No. 7. Sir Bryan Leighton straights with Instructor Manton.

At W. H. Ewen School, 6.45 a.m., Mr. Turner test on No. 1 Caudron. Lieut. G. Adams and Mr. Warren circuits and 8's. Mr. Prosser straights. M. Baumann on 35-h.p. Caudron No. 2. Lieut. U. C. Hicks, Messrs. Goodden, Gist, McGregor, and Cowling straights. All pupils out later.

At Deperdussin School, Mr. Bauman half circuits. In evening, Mr. Spratt testing No. 5. Lieut. Bourke, promoted to this machine, 35 mins straights, half dozen circuits and couple of good figures of 8.

At Blériot School, Mr. De Villiers rolling on No. 1. M. Gandillon circuits on No. 4.

Mr. Whitehouse with passengers on Handley Page mono.

Brooklands.—At Flanders School, 5 a.m., Mr. Dukinfield-Jones circuits 20 mins, came down with H.T. terminal out of magneto. Then up again ½ hour.

At Bristol School, Mr. Merriam testing with Major Merrick. Latter straights alone and first circuits. Lieut. Duncan first hops alone.

At Vickers School Mr. Knight on biplane with Major Cameron. Then Major Cameron circuits, and eights. Messrs. Mitchell and Orr Paterson circuits on biplane. Mr. Knight then went on biplane with Mr. Waterfall as passenger, to test conditions for brevet. Major Cameron then for brevet, very well in bumpy wind. In evening Mr. Knight testing No. 3 mono, followed by Mr. Andreas straights 30 mins.

Salisbury Plain (Bristol School).—Mr. Busteed on biplane to Fargo, but conditions too bad for tuition.

Brighton-Shoreham.—At Avro School. Messrs. Raynham and Rolshoven circuits.

WEDNESDAY, May 7th.

R.F.C., Farnborough.—On M. Farman 307, Lieut. Gould 10 mins, Capt. Board 10 mins, Lieut. Waldron with Capt. Neal 15 mins, Lieut. Smith-Barry with Lieut. Haytor 12 mins. On Bréguet, Capt. Beor 7 mins, Lieut. Chinnery 21 mins, Lt. Playfair with Lieut. Thompson 11 mins, Sergt. Hunter with Lieut Soames 9 mins, Sergt. Hunter with A.M. Samson 17 mins, Sergt. Hunter with A.M. Maskery 7 mins, Capt. Sheppard 7 mins

R.F.C., Lark Hill.—On Maurice Farman 216, Sergt. Bruce 5 mins.

Hendon.—At Grahame White School, Sir Bryan Leighton out at 6.40 a.m. straights with Instructor Cheeseman.

At W. H. Ewen School, 6.20 a.m., Mr. Baumann on 35 h.p. Caudron No. 2. Lieut. Hicks and Mr. Goodden straights. Mr. Pendlebury rolling. Mr. Turner on No. 1 Caudron. Lieut. G. Adams half circuits. Mr. Prosser straights.

At Deperdussin School, Mr. Brock testing No. 5. Lieut. Bourke circuits and 8's. Mr. Barron also out.

At Blériot School, Mr. Reilly four circuits No. 3 at 200 feet. Mr. R. Desoutter brevet, but too windy.

Mr. Whitehouse alone on Handley Page mono.

Brooklands.—At Flanders School, 5 a.m., Mr. Dukinfield-Jones testing engine. Up again 20 mins, and broke piston.

At Bristol School, Mr. Bendell testing with Lieut. Morgan (prospective pupil). Major Merrick circuits and 8's. Lieut. Broder first turns. Lieut. McClellan alone. Mr. Bendall with Lieut. Duncan, straights.

At Vickers School, early, Mr. Knight testing biplane, then handing over to Mr. Mitchell for eights at 300 ft. Mr. Andreas straights on No. 3 Mono 30 mins. Lieut. Blatherwick straights on No. 3 10 mins, Mr. Mitchell on biplane circuits at 500 ft. Mr. Knight with Mr. Waterfall circuits on biplane

THURSDAY, May 8th.

Salisbury Plain (Bristol School).—Messrs. Adams and Garnett tuition under Mr. Busteed. Weather bad.

Brighton-Shoreham.—At Avro School.—Weather was still unfavourable, but Mr. Rolshoven circuits in evening.

FRIDAY, May 9th.

R.F.C., Farnborough.—Their Majesties the King and Queen visited Farnborough Aerodrome, arriving at about 5 p.m., to inspect airships and aeroplanes. Evening perfect. First craft up was airship "Beta" followed by "Gamma," these remained in air over an hour circling aerodrome while the eighteen aeroplanes, consisting of 4 B.E.8, six M. Farmans, five H. Farmans, one Bréguet, one Blériot mono and one Short, made one big circuit, starting from aeroplane sheds and landing on Jersey Brow. Various operations successfully carried out. Messages from wireless fitted to craft. Bomb dropping, and smoke rocket signals, etc. Their Majesties left about 6.30. So many aeroplanes and airships have hitherto not been seen in air together.

R.F.C., Lark Hill.—General migration of machines from Lark Hill to Farnborough for inspection by his Majesty the King. Squadron astir with breaking of dawn. Correspondent says, "Wondrous silence was broken by the opening of great doors, the whirring of propellers, and the beauteous song of the lark."

At 5.5 a.m. Major Brooke-Popham on B.E. 205 to try air. At 5.8 Capt. Allen on B.E. 272 left ground, Lieut. Wadham at 5.17 on B.E. 205, Lieut. Cholomondeley at 5.21 on Henry Farman 274, Lieut. Carmichael at 5.28 on Henry Farman 275, Lieut Allen 5.35 on Henry Farman 227, Sergt. Ridd at 5.48 on Maurice Farman 210, Lieut. Ashton on Maurice Farman 269 at 5.53, Major Higgins at 6.3 on Henry Farman 286, Capt. Conner at 6.57 on Maurice Farman 270. Each machine made one circuit and then headed for Farnborough.

Hendon.—At Grahame-White School, Sir Bryan Leighton 6.50 a.m., straights on No. 7 with Instructor Cheeseman, and afterwards alone.

At W. H. Ewen School, 5.30 a.m., M. Baumann on 35-h.p. Caudron No. 2. Lieut. Hicks straights and half circuits; Mr. Cowling rolling. Mr. Turner on No. 1 Caudron. Lieut. G. Adams, flying circuit, turned too near ground and came to grief.

At Deperdussin School, under Mr. Brock, M. Baumann 6 straights on No. 3. Mr. Hudson on six straights landings fair, wind and rain stopped further work. Mr. Jaques (new pupil) 10 mins rolling practice on No. 2. At sundown Mr. Brock tested, then Lieut. Bourke went for brevet on No. 5, passing in excellent style.

Mr. Pickles returned to fly Handley Page mono. Went up to 4,000 ft. alone, then took passenger. Engine let them down at Harrow. Landed in bad ground and flew back alone.

Brooklands.—At Bristol School, Mr. Merriam high flight. Major Merrick straights. Lieut. McClellan straights and circuits. Mr. Merriam with Lieuts. Morgan, Wall, and Duncan and Mr. Harris; also with Lieut. Noott (prospective pupil). Mr. Bendall with Lieut. Morgan. Mr. Merriam to Chertsey and back.

Windermere.—Mr. Trotter flying Mr. Gnosspelius's hydromonoplane.

Brighton-Shoreham.—At Avro School, Mr. Alcock out on Green Avro, but engine pulling badly so came down. Avro, with 40-h.p. E.N.V., is also "hors de combat."

SATURDAY, May 10th.

Hendon.—At W. H. Ewen School, too windy for pupils. M. Baumann fine flight on 35-h.p. Caudron No. 2, climbing to 2,000 ft and finishing with nice spiral.

At Deperdussin School.—Lieut. Porte on 100-h.p. testing at daybreak. Mr. Barron went for and passed brevet 300 ft. In afternoon Mr. Brock took 35-h.p. machine up to 4,300 ft in altitude contest and Lieut. Porte flew 100-h.p., winning his first heat in speed handicap in splendid style.

Mr. Pickles to Winchester on H. P. mono. Competition flying given in special report.

Windermere (Lake Flying Co.).—Mr. Stanley-Adams on "Water Hen." Mr. Trotter on Mr. Gnosspelius's hydro-monoplane twice, finishing with slight accident—no one hurt.

SUNDAY, May 11th.

Brooklands.—The Parsons biplane out testing. Mr. Jack Alcock out for 20 mins, climbing to 1,500 ft and circling Weybridge. The machine has a big margin of lift in spite of obsolete Aster engine fitted, the total weight of the power unit water radiator, etc., being nearly 400 lbs. This machine was built by Mr. P. M. Muller to test Parsons Automatic Stabilising Wheels. These will be fitted in the course of a week or so.

Hendon.—At W. H. Ewen School, test by M. Baumann, Lieut. Adams and Messrs. Zubiaga and Goodden straights and half-circuits, while Mr. Charles George (new pupil) rolling.

Numerous pilots flying all day. (See special report.)

Gustav Hamel.

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Great Pilot! we thrill as your movements we follow,
Unsurpassed are your merits, your pluck and your skill;
Soaring or swooping like skylark or swallow,
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Volplaning or flying at high or low speeds.
High like an eagle you soar out of sight,
And then on the earth like a bird you alight:
Marvellous feats which all must admire,
Extolled by the crowd as a most daring flier—
Long may you fly, with good luck in each flight.

Charles Maxey.



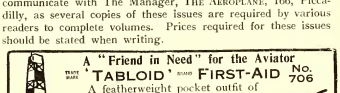
Sergeant Robbins, R.F.C., who took his certificate on a Maurice Farman on April 21st.

Helps and Hindrances in Photography.

A little brochure bearing the above title has just been issued by the enterprising firm of Burroughs, Wellcome and Co., whose photographic chemicals in compact "tabloid" form are well known to all photographers. This booklet is a tabloid, too, a sort of tabloid treatise, full of useful information and sound advice to amateur photographers, containing also some interesting reproductions, and the ingenious "Welcome" exposure calculator. The booklet will be sent, gratis, on application to 54, Wigmore Street, London, W., on mentioning THE AEROPLANE.

Wanted.

Will any readers of THE AEROPLANE who happen to have odd copies dated February 8, 1912, and September 28, 1911, communicate with The Manager, THE AEROPLANE, 166, Piccadilly, as several copies of these issues are required by various readers to complete volumes. Prices required for these issues should be stated when writing.



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THE Owner of British Patent No. 11,355 of 1910, entitled "Improvements in Aeroplanes," is desirous of disposing of the patent or entering into working arrangements under licence or otherwise with firms likely to be interested in the same. A copy of the patent specification and full particulars can be obtained from and offers made (for transmission to the owner) to MARKS AND CLERK, 57 and 58, Lincoln's Inn Fields, London, W.C.

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This tells you all about the most interesting events of 1911 and 1912. In the chapter on the first Aerial Derby there is a detailed account of the race. There are also photographs of the start, two photographs taken en route by a photographer carried by one of the competitors, reproductions of an excellent sketch map of the course, a photograph of the "Daily Mail Trophy," and the winner being "chaired" on his arrival at Hendon.

Other events, such as the first Night Flying Demonstration, are all recorded with the same fullness and accuracy.

The book is the most complete and by far the most interesting record that has yet appeared in connection with the flying at Hendon, and as it is rapidly going out of print any reader of the "Aeroplane" who wishes to obtain a copy should write without delay to the London Aerodrome Offices, 166, Piccadilly, W. The book costs 7d. post free.

Next Week-end at Hendon

SUMMER MEETING,

Saturday, May 17th.

SOME excellent racing should be seen at this meeting. At 3 p.m. (weather permitting) will start the first lap of a Grand Speed Pylon Race, each competitor handicapped on previous performances. After the final lap there will be exhibition flying and at 4.30 p.m. a Cross-Country race will start to Elstree and back twice. These cross-country events are always interesting and frequently result in most exciting finishes.

Passenger flying, which has now become so wonderfully popular, will take place between and after the events.

These meetings invariably provide some new feature of interest for the regular visitor, and even an occasional visit is always enjoyable. Admission 6d., 1/- and 2/6 (including chauffeur)

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Sunday, May 18th, 1913.

UNDER the auspices of "The Era" and the Management of the London Aerodrome, an Aviation Sunday will be held at Hendon on May 18th.

In order to add to the interest of the occasion the Management of the London Aerodrome has decided to offer Free Flights to two lady members of the profession, who shall be selected by votes by the readers of the "Era."

Flights will be made during the afternoon by various prominent members of the profession, in addition to the usual attractive exhibitions of flying by the well-known Hendon aviators.

It has also been arranged for a collection to be made during the afternoon by lady members of the profession on behalf of Charities, and amongst the ladies who have kindly offered their services in this connection may be mentioned the Misses Ethel Levey, Maidie Hope, Shirley Kellogg, Lydia Kyasht, Ella Retford, Rena Parker, Mamie Buck, Unity More, Phyllis Bedells, Amy Elliott, Jane Wood, Nita Carew, Senorita Carmen Turia, Miss Renie King, Mrs. Herbert Darnley, Miss Nora Benson, Miss Marie Kendall, Miss Phyllis Monkman, and Miss Muriel Hudson.

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THE AEROPLANE

Edited by C. G. GREY. ("Aero Amateur")

1d WEEKLY

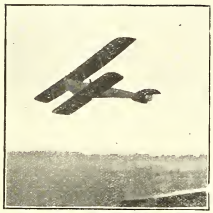
VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, MAY 22, 1913. No. 21.

THE EDINBURGH AERONAUTICAL SOCIETY READING ROOM.

THE NEW SEA POWER AT VENICE.



Above, Captain Ginocchio's flying boat and one of the Italian dirigibles (P.2). Below are three Curtisses and a Borel. Photographed at a review of a squadron of Italy's motorplanes at Venice.



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AERONAUTICAL SOCIETY READING ROOM,

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L'Affaire Brindejonc.

There is something exceedingly comic, even Gilbertian, in the position which has arisen out of the Royal Aero Club's action concerning M. Brindejonc des Moulinais. It will be remembered that in arriving at Hendon M. Brindejonc not only failed to give official warning of his advent, but had the temerity to fly over prohibited areas, for which he was duly hauled to Bow Street and let off with a caution. Thus simply did the guardians of the law of the land deal with a real offence.

Not so our amateur legislators of the Royal Aero Club. M. Brindejonc had also committed the heinous crime of flying over London, almost over the sacred edifice at 166, Piccadilly, which shelters such pillars of aeronautical progress as the R.Ae.C.; The Aeroplane; the Grahame-White Aviation Co.; the Green Engine Co.; Messrs. DelaCombe and Maréchal; Lang, Garnett and Co.; Mr. B. C. Hucks. A very hotbed and nest of things aviatic. The power-station, so to speak, of British aviation. Could such an insult go unavenged? In good sooth, nay. Therefore, a committee meeting of the R.Ae.C.—or what Lord Haldane might conceivably call "a sort of a committee meeting"—was hastily summoned a few hours after M. Brindejonc had passed over, and a letter was sent to the Grahame-White Aviation Co. at Hendon to intimate that the criminal's "competitor's licence" had been withdrawn. A private letter was also sent to the Clerk of the Course telling him that the other letter had been sent.

Now kindly note, the offence was committed on Sunday afternoon, and these letters were sent in order to stop a foreign sportsman, who had flown 500 miles for the purpose, from competing in races next day. He was not asked to appear before this "sort of a committee," he was condemned untried. Also it is necessary to note that no attempt was made to have his aviator's certificate suspended by appealing to his own ruling body, it was merely the competitor's licence, which is issued by the Royal Aero Club for this country alone, which was withdrawn. Also, it seems to me that the proper people to advise officially of its withdrawal were the Stewards of the Meeting and M. Brindejonc, not a firm of aeroplane proprietors who have no official hand in the management of the Hendon meetings, except as promoters. Further, the idea of trying and condemning a man unheard is un-English, unsportsmanlike, and in this particular case unusually discourteous. And I am strongly of the opinion that it is absolutely illegal. The action suggests that of the man who not being sure of his own powers hits out blindly and generally hits the wrong man.

However, the Stewards of the Meeting having been unofficially told of the R.Ae.C.'s action warned M. Brindejonc that even if he flew for and won the Giesler Cup, and other competitions, he might be considered as not having started, which was obviously the correct thing to do. He did start and he won. The prize-money was paid to him the same evening.

Next day the stewards met and, having seen the R.Ae.C.'s letter for the first time, they decided that M. Brindejonc's start was not in order, and consequently that he had not started, and that therefore Mr. Brock, on the 35-h.p. Deperdussin was the winner.

It will now be interesting to see what happens. M. Brindejonc has the cup and the money. He was condemned unheard, therefore the condemnation cannot surely be legal, and he will probably hold on to his winnings. But, on the R.Ae.C.'s decision, Mr. Brock is the winner and is entitled to sue someone or other for the prizes, just as the third and fourth men are entitled to sue for the second and third prizes. The question is, who is liable? Is Mr. Brock to sue M. Brindejonc for the prizes, or is he to sue the Grahame-White Company for parting with them, or is he to sue the R.Ae.C. for not giving him and the other competitors warning that M. Brindejonc was suspended, or is he to sue the Giesler people for not giving him the prizes they promised, or is he to sue the pylon keepers for not flagging M. Brindejonc down as a competitor who was disqualified, or is he to sue the Secretary of the R.Ae.C. personally for not intimating publicly that M. Brindejonc was suspended?

Then, what action is M. Brindejonc to take, or what is to be taken against him? Is he to be sued in the French or the Belgian Courts for a restitution of the cup and prize-money, if so, by whom and on what grounds, and who takes the money if he pays it over? Is it to be paid to the R.Ae.C. or to Gieslers, or to the Grahame-White Co., or to Mr. Brock, and what is the *locus standi* of the Deperdussin Co. who, presumably, have a lien on their pilots' winnings; also, do Mr. Verrier, who was third, and Mr. Slack, who was fourth, take a hand in the game, supported by the Aircraft Co., and the Blériot Co., as parties interested in their winnings?

Anyhow, what is the best way out for the R.Ae.C.? They have done a silly and an unsportsmanlike thing in a moment of panic, even if they have not acted illegally, so they may as well own up to it. The best they can do is to call "as you were" all round, but even then if Messrs. Brock, Verrier and Slack like to be bad sportsmen—which they are not—they might claim that if M. Brindejonc was once suspended he was a non-starter, and therefore cannot now be con-

sidered to have started. The only possible graceful climb down seems to be to cancel the suspension by an "order in council," or something of the sort, ante-dated to a period five minutes after the suspension was passed.

This is too fine a problem for the lay mind. The legal intellects which have got the Club into the tangle had better get them out of it.—C. G. G.

PIECE-WORK ON AEROPLANES.

The secretary of the Willesden branch of the Amalgamated Society of Engineers forwards the following resolution, which was passed unanimously :—

"The Willesden branch of the Amalgamated Society of Engineers are strongly against the institution of piece-work in the manufacture of aeroplanes, being of opinion that up to the present aviation is a dangerous occupation, even under the best of conditions, and therefore only the best work should be put in, and we certainly agree that piece-work does not conduce to the production of the best of work, and consequently are unanimously against its introduction."

The subject of piece-work on aeroplanes is one which is worth very serious consideration. There is no doubt that, taking it all round, piece-work is apt to be less reliable in quality than time-work, simply because a workman is more concerned in the amount of work done than in the quality of it. Obviously, no workmanship can be too good for aeroplanes, but it is, of course, necessary to differentiate between classes of workmanship, for beautiful superficial workmanship done by a high-class cabinet maker may be good to look at and very dangerous to use, whereas the comparatively rough job externally may be thoroughly reliable internally.

There is undoubtedly certain work in connection with aeroplanes in which piece-work might be employed, as, for example, cutting off wood to certain lengths for ribs or parts of ribs, though the actual assembling of the rib itself from those parts must obviously be done on time-work, and with infinite care. Naturally, also, if machines were being built in quantities there are numerous minor jobs which could safely be done piece-work because, if the material is right to begin with, nothing depends on the piece-worker except making things the right size, and if they are not made the right size they are simply unusable, but not in any way dangerous. Unfortunately, we have not quite reached the stage at which aeroplanes are turned out by the hundred all exactly alike, and consequently there is not much opportunity for this particular kind of piece-work.

It is, however, very highly satisfactory that a branch of the Amalgamated Society of Engineers, a society from which the best class of workmen are drawn, should of their own initiative pass a resolution of this kind, as it shows that the men on whom the lives of pilots ultimately depend are themselves alive to the responsibility in the making of aeroplanes that rests on them. It has often been said, and it is to an extent true, that though the British workman when properly trained is the finest workman in the world, he lacks imagination, and that the artist-artisan cannot be produced in this country, though the Latin countries produce them in large numbers. The artist-artisan has certainly had a great deal to do with the development of aeroplanes and motor-cars in France and Italy, whereas in this country both vehicles have been almost entirely the product of unthinking workmen making machines under the eye of the designers, and though here and there one comes across a mechanic working on a machine who has ideas and actually influences the design of the machine, he is rather a phenomenon.

However, so long as the men working on aeroplanes recognise fully the responsibilities which rest on them, it is, perhaps, even more desirable to have work done by those who are simply resolved to do the best possible work exactly as instructed, than it is to have men who persist in working in ideas of their own; and as a proof that a proper view in this respect is taken by the better-class British mechanic the resolution quoted above is satisfactorily convincing. —C. G. G.

The Strength of the R.F.C.

It is of interest to note that the seventeen aeroplanes which flew before the King during his visit to Aldershot represented practically the total effective strength of the R.F.C. (Military Wing) on that date.

Eight biplanes were brought up from No. 3 Squadron at Lark Hill, which stripped that squadron of every machine in first-class flying condition. Eight more were turned out by No. 4 Squadron and the R.F.C. depot at Farnborough—many of these having just been taken over from the R.A.F.—so that they represented more than the real strength of No. 4 Squadron alone. One monoplane belonging to No. 2 Squadron was also flown.

I gather that three or four other machines were paraded but were not flown, and that these were brought out from the R.A.F. but did not belong to any of the existing squadrons.

By a peculiar coincidence, all five machines of No. 2 Squadron at Montrose were laid up at that date, so that none of them could have taken the air under any circumstances.

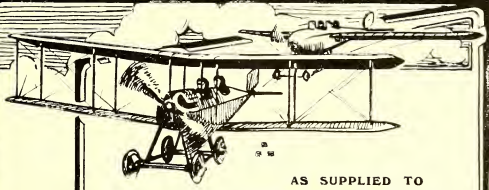
One hears that the King was not unduly impressed by our display of air power, though he appreciated the fine flying of the Army pilots, and it is said that his Majesty remarked that the "Beta" appeared to him to be very small for practical purposes. Those who had the honour of conversing with the King at Olympia will realise that his knowledge of aircraft is such as to obviate any chance of his acquiring an erroneous idea of the value of our present aerial strength.

The Accident to the Wight Navyplane.

Happily the accident to Mr. Howard Wright on the Wight Navyplane seems to have been exaggerated. The machine had been ready to fly for about ten days, and had been on the water every day running the engine and testing the controls. On May 15th Mr. Howard Wright took the machine out at about 5.50 p.m. and went out of the river into the Solent. The machine behaved quite well, travelling with the wings horizontal, and the floats just touching the water.

She manœuvred in and out among the boats at great speed, and then turned to westward at the Royal Yacht Squadron and ran some distance, afterwards turning round and going eastward against what little wind there was. It was practically calm. She came off the water easily only keeping to the surface with full engine for a very short distance. Then suddenly she went up almost vertically, stopped, and did a tail slide, toppling over to the left and backwards. The pilot knew he had overdone the lifting but could not regain control, and so jumped clear. He was up about 60 feet, but it all happened so quickly that it was not easy to follow exactly what happened. He is not seriously hurt, but his face struck the water and is bruised, but not cut. He had a cigarette case in his pocket under his life jacket, and there is a bruise over his liver apparently caused by the cigarette case. The machine is smashed up except the floats, which behaved remarkably well. The engine and all details have been saved, and Sir J. Samuel White and Co. are proceeding to build an identical machine.

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The German Military Aeronautical Services.

BY W. E. de B. WHITTAKER.

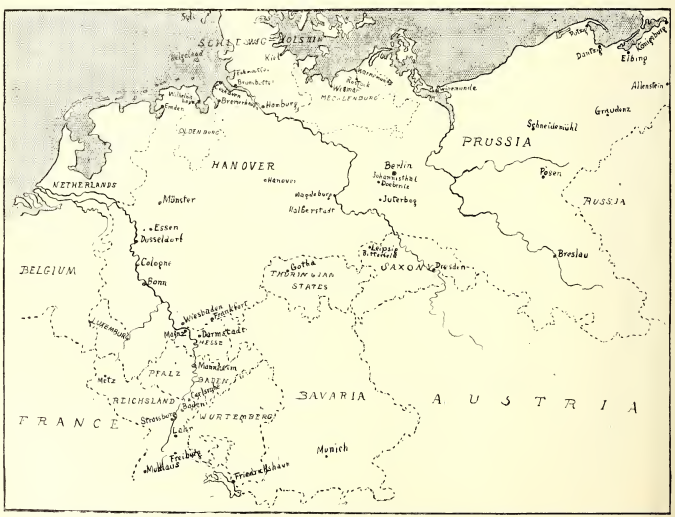
At all times in the history of the modern world there has been some nation which by reason of the magnitude of its military preparations has held the close and suspicious attention of other Powers. The extent of its armed forces sets a ready standard for its neighbours, and its methods of training are of deep interest as giving some indication of its intentions in the future. Every day of undisturbed peace adds to the strain, until at last the tension is too great and something happens.

Germany is at the present moment a cause for great uneasiness in the Concert of Europe. Its commercial aspirations give point to the steady increase in the Imperial Army and Navy. Whatever course Germany may take, it will not be that of purposeless aggression. The commercial prosperity of the country underlies every move. If by fair means or foul the Empire can become the first Power in the world, then will it also lead in all the markets of the earth.

Thus, it is not unreasonable to suppose that its military preparations are directed against its principal commercial rivals. Of these this country is one. Hence, it behoves us to pay attention. We should at the least, be on the defensive. Each move of Germany should be parried by one on the part of Great Britain. This country stands alone in the world. In the time of trial we cannot rely on help from any beyond our frontiers. Self interest is the ruling feature in international politics, and it is unlikely that any nation will take untold risks in order that we may retain our pre-eminent position.

The matter which concerns us particularly is the expansion of the German aeronautical services. In this article I propose to summarise the intentions of the German Government in aeronautical affairs so far as is possible from the scanty information available. The German General Staff is not in the habit of publishing detailed expositions of their plans, and it is well to distrust all statements which emanate from semi-official sources.

The military system which had its birth in the confederation of German States which fought France in 1870, and has survived as an entity ever since, is not as clearly understood as might be the case. Alike in their aims and prejudices with a common language, and ruled by customs of similar aspects the various small States which had at one time been units in the Holy Roman Empire, the last shadow of the greatness of which had died sadly in 1807, again realised the truth of the adage that unity is strength, and combined under the guiding hand of the King of Prussia, whose singular ability in the selection of men, and his honesty of purpose, carried the new Germany through to overwhelming victory. But each small State regarded itself as in essence the most important of the Empire, and, in consequence, each fought hard



German development may be gauged from this map. Every town shown indicates an air station already properly equipped either for dirigibles, aeroplanes, or waterplanes, and in many cases for two or all three of these types. Fifty-one stations are shown.

AERONAUTICAL READING ROOM



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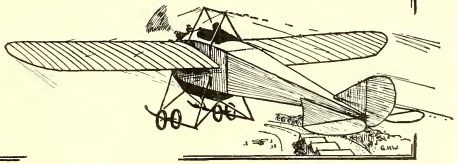
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to preserve some shadow of its former independence. As a result, though the Emperor is War Lord, he has not the actual command in times of peace of the entire forces of the Empire. The Kingdoms of Bavaria, Saxony, and Wurtemberg all control their armies independently, and without detailed reference to the Emperor.

The Emperor "is, strictly and legally speaking, during peace time, only entitled to issue orders to the Navy, to the Prussian Army, and to the Alsace-Lorraine troops in the Prussian Army. As regards the remaining troops—even those of small States whose troops are affiliated to Prussia—he is obliged to obtain the consent of their respective Sovereigns or ruling Princes in every case. With regard to the three Kingdoms, and especially that of Bavaria, there are special Conventions which impose severe restrictions on his authority. But, in any case, if he issues an order to any troops, except Prussian (or those of Alsace-Lorraine, or the Navy), he has to do it, either directly or through the *Bundesrat* (Federal Council) Military Committee, to the Sovereign of these troops, who thereupon issues the order as his own, and not as an Imperial order. In practice, this restriction is waived except in the three kingdoms." (Army Review, p. 154, July, 1911.)

These facts must not be forgotten in dealing with the aeronautical strength of the German Army. It must not be forgotten that Bavaria has a flying corps of some strength, which is not included in the numbers given for the Empire.

The Imperial Government in dealing with the initiation of a new arm or a new science, realises that in the early stages it is a matter of capital expenditure, and that the preliminary charges should not be embodied in the ordinary Budget, but should be the subject of a special Bill before the Reichstag. The formation of the Navy was treated in this manner some 20 years ago. The expansion of the aerial service into a new arm of a magnitude and importance not overshadowed by the other great arms is to be dealt with after the same fashion. The placing of the corps on a proper footing is to be spread over a period of five years—from 1913 to 1918. The expenditure involved in this five-year programme is separated from the annual maintenance grant which forms a part of the annual Army Estimates.

There are a certain number of alterations in organisation which, it is considered, can be carried out before the end of 1913. For this purpose a sum of about £1,700,000 is set aside. The rough details are as follows :—

The corps is to be under the supreme control of an Inspector-General, who, at the same time, exercises supervision over the Railway Battalions, Field Telegraph Companies, Motor Reserve, and all the aerial forces. Under him will be two inspectors, with headquarters at Berlin, who will be in direct touch with the dirigible and aeroplane sections.

Five dirigible battalions and four aeroplane battalions are to be formed. Their stations will be as follows :—

1st Dirigible Battalion.—1st and 2nd Companies, with flying school and *montage*, Berlin.

2nd Dirigible Battalion.—1st Company, with workshops and battalion headquarters, Berlin. 2nd Company, Hanover. 3rd Company, Dresden.

3rd Dirigible Battalion.—1st Company, with battalion staff at Cologne. 2nd Company, Dusseldorf. 3rd Company, Darmstadt.

4th Dirigible Battalion.—1st Company, with battalion headquarters at Mannheim. 2nd Company, Metz. 3rd Company, Lahr. 4th Company, Friedrichshafn.

5th Dirigible Battalion.—1st Company, with battalion headquarters at Koenigsberg. 2nd Company, Graudenz. 3rd Company at Schneidemuhl.

1st Aeroplane Battalion.—1st and 2nd Companies, with battalion headquarters at Doeberitz. 3rd Company, Zaitheim. A station for training of fire control pilots at Juterborg.

2nd Aeroplane Battalion.—1st Company, with battalion headquarters at Posen. 2nd Company at Graudenz. 3rd Company, Koenigsburg.

3rd Aeroplane Battalion.—1st Company, with battalion headquarters at Cologne. 2nd Company, Hanover. 3rd Company, Darmstadt.

4th Aeroplane Battalion.—1st Company, with battalion headquarters at Strassburg. 2nd Company, Metz. 3rd Company, Freiburg.

These nine battalions are distributed in three strategic sections, one lining the Russian frontier in Prussia and Silesia, the second along the Rhine on the French Frontier, and the third centred at Berlin.

For the general expansion during the next five years the sum of £2,500,000 is allotted. With this, two squadrons of dirigibles (four in each) are to be formed and one machine is to be maintained in reserve. These squadrons will have a common station. Each dirigible is presumed to be capable of four years' service, after which it is to pass into the reserve.

A central station is to be formed with six subordinate posts. Fifty aeroplanes are to be maintained—six escadrilles of six aeroplanes, and a reserve of fourteen. The subordinate stations, which are not kept at strength in times of peace, become permanencies in the event of war. All aeroplanes will be replaced by later types as occasion demands.

The allocation of the £2,500,000 is as follows :—		
For the Dirigible service		£1,750,000
Dirigibles	£550,000	
Hangars, etc.	£200,000	
General expenses	£500,000	
For Aviation service		£450,000
Aeroplanes	£150,000	
Hangars, etc.	200,000	
General expenses	100,000	
Personnel		£300,000
		£2,500,000

Provision for the Naval Air Service is made to the extent of £2,500,000 for the same five years (1913-1918), but this does not come within the scope of this article. None can tell to what lengths the Navy will go in the organisation of a flying corps, and it is impossible to name a proper sum with any degree of certitude.

Naval and Military Aeronautics.

GREAT BRITAIN.

From the "London Gazette," May 13th. Admiralty, May 9th :—

Royal Naval Reserve.—Probationary Sub-Lieut. J. L. Travers has been confirmed in the rank of sub-lieut. (Nov. 26th, 1912).

Admiralty appointments, May 16th :—

Lieutenants—A. J. Miley and E. Osmond, both to the "Hermes," additional, for flying course at Naval Flying School, Eastchurch, to date June 1st.

Captain, R.M.L.I.—A. C. Barnby, to the "Hermes," additional, for flying course at the Naval Flying School, Eastchurch, to date June 1st.

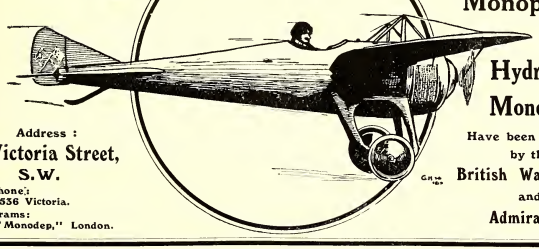
Admiralty Appointments, May 17th :

Royal Naval Reserve.—Mr. Robert Arthur King to the "President," additional as probationary Sub-Lieutenant, for course of instruction at Central Flying School, to date May 17th.

From the "London Gazette," May 16th. War Office. Special Reserve of Officers :—

Royal Flying Corps, Military Wing.—The following to be

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Sec. Lieuts. (on probation):—R. W. R. Gill, D. E. Stodart (May 17th).

The following officers will join the Central Flying School, Upavon, on May 17th to qualify for appointments in the Naval Wing of the Royal Flying Corps:—Lieuts. A. B. Gaskell (of the "Mosquito"), C. E. Maude ("Indomitable"), F. G. Brodribb ("Collingwood"), A. W. S. Agar ("Ruby"), W. G. Sitwell ("Antrim"), C. H. K. Edmonds ("King Edward VII"), Capt. H. Fawcett, R.M.L.I., and Lieut. G. H. V. Hathorn, R.M.L.I.

The first annual dinner of the Royal Flying Corps will be held on Friday, June 6th, at the Café Royal. All officers of the Central Flying School, Naval and Military Wings, and Reserves are invited to attend. Applications should be made to the President, Officers' Mess, R.F.C. (M.W.), South Farnborough, not later than the 31st instant.

Squadron No. 2, at Montrose Aerodrome, is shortly to be increased by four "B.E." machines and one Blériot monoplane. Major Burke, Capts. Becke and Longcroft, and Lieut. Lawrence have left Montrose for Farnborough to pilot these machines north, and may have arrived at Montrose by the time these notes appear. Capt. Darbyshire is to accompany this squadron to Montrose and is to be attached to it. Lieut. Lawrence is to fly the Blériot machine and the other pilots the "B.E." biplanes. This will bring the number of machines with No. 2 Squadron up to ten, counting those under repair.

FRANCE.

On May 11th Sapper Irat with Lieutenant Monroe as passenger flew in a Henry Farman biplane (80-h.p. Gnome) from Mourmelon to Sissonne. On the way he landed at Vervins, Saint Quentin and Mont-Fresnoy. His landing at this latter place was brought about by the pouring rain. He alighted in a cornfield without any trouble. Lieutenant de Gensac flying a similar machine also travelled from Mourmelon to Sissonne, but without incident.

Sappers Robinet, Berlot and Lanier have during the past few days been making extended flights on Bathiat Sanchez monoplanes (military type) at Reims. These machines are in some degree the successors to the Sommer monoplanes. The standard motor fitted is the Clerget rotary of 60 h.p.

On May 13th two naval hydro-aeroplanes piloted by officer-pilots were flown from Frejus to Toulon in order to take part in the naval manœuvres. On alighting they took up their positions alongside the parent-ship "Foudre."

Captain Aviator Schneegans in a Henry Farman biplane (80-h.p. Gnome) with Lieutenant Alexandre Dumas as passenger left the Camp de Mailly at 5.32 and passed over Vitry-le-Francois and Saint-Dizier in the direction of Luneville, where he landed at 7.30 a.m. Restarting at 7.40 a.m., they flew at a height of 4,000 feet to Toul, passing over Nancy on the way. They landed at 8.32 a.m., having covered a distance of 150 miles without incident.

The Maubeuge escadrille under the command of Captain Aviator Yence flew from that place to Dunkerque on May 13th in the early morning returning to its base later in the day. The journey took about an hour and a half. The composition of this escadrille is as follows: Captain Yence, O.C., Blériot monoplane (Gnome engine), Lieutenants Lalanne and Radisson, and under-officers Didier and Verdier all flying Deperdussin monoplanes (Gnome motors).

On May 14th in spite of wind and rain M. Chevillard passed eight Henry Farman biplanes (80-h.p. Gnome) through their delivery tests for the French Navy. Captain Destouches was in charge of the reception committee. The trials were made at Etampes.

Sapper Pequet of the Epinal Escadrille has done a number of cross-country flights during the past week or so. He flew to Buc on a Borel monoplane from Epinal that he might fly before the King of Spain. He then flew to Chateaufort where the Borel school is situated, returning to Epinal on the following day.—W.

GERMANY.

A formal Imperial decree ordains the formation by June 1st, 1913, of a naval dirigible station at Johannisthal and a naval aviation station at Putzig on the Baltic.

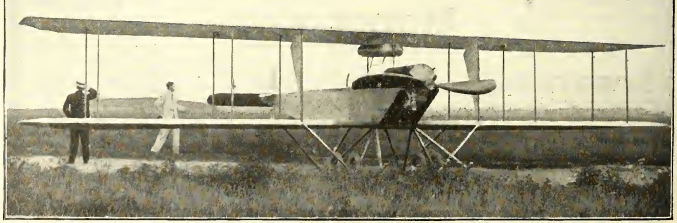
The Zeppelin Company has lost during the year 1912 over £67,000, which represents half the capital of the company. It is pointed out that the Government subsidy is quite insufficient to make up for the loss of foreign custom necessarily entailed. This deficit is the more remarkable when it is remembered that the price of a Zeppelin dirigible has doubled during the year.

It is stated in France that two German officers, Lieutenants Graetz and Kafisch have recently visited Antibes with a view to inspecting the hydro-aeroplanes designed and flown by M. Joseph Garbero. Several flights were made in the neighbourhood of Nice with one or other of the officers as passengers. It is said to be the intention of the German Government to purchase several of these machines for the Imperial Navy.

The Crown Prince of Prussia has recently displayed great interest in military aviation and in aeronautics generally. He is said to have submitted designs for a new type of dirigible shed for the consideration of the Ministry of War. He is anxious that a large number of aeroplanes shall take an effective part in the coming Imperial manœuvres.

There is to be an aviation meeting at Johannisthal on May 25th. The Ministry of War has undertaken to give prizes amounting to £4,000.—W.

"Z.4," the Zeppelin of Lunéville renown, has left Baden-Oos for a short stay at Gotha, before being taken to Potsdam. It started from Oos at 9 a.m. and landed at Gotha at 5 p.m., after fighting contrary easterly winds on the entire journey. The steering was in the hands of Lieutenant Jacobi, a member of the Military Commission on the French trip, and who is of Scotch descent on his mother's side.



A Burgess tractor biplane, military type (70-h.p. Renault engine), purchased by the U.S. Army.

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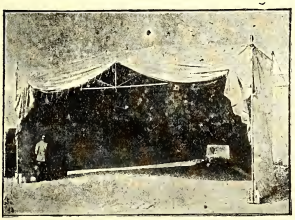
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The German Emperor has decreed that a naval airship detachment, garrisoned at Berlin-Johannisthal, and a naval aviation detachment, to have its home at Danzig-Putzig, are to come into being on July 1st. Both formations will be recruited from the aerial staff in the Navy.

During a heated discussion in the Metz Town Council as to the housing of the petrol tanks for the military aviation station, it was said that the number of flying machines at Metz were to be increased to about one hundred. Even if a total of but half this number were reached it would be enormous for one military centre only.—B.

AUSTRIA.

The tragedy in the Air Squadron at Vienna, when Lieut. Weiss, the well-known aviator, was killed in a duel by Capt. Zborowski, apparently is not yet ended, as it is said that seven other army aviators have challenged the captain owing to insulting remarks said to have been passed by Zborowski on the Air Squadron. The military court of honour and O.C. Corps are endeavouring to smooth the matter over without further bloodshed.—B.

The military pilot, Captain Andrie, fell while flying near Capljina (Herzegovina) on May 17th, and was killed. Lieutenant Slassig, his passenger, was only slightly injured.

BELGIUM.

Great activity continues in the military flying corps. On the afternoon of May 7th Lieutenant Demanet flew for an hour at 3,000 feet with a passenger on a Henry Farman biplane (80-h.p. Gnome) in order to fulfil one of the tests for his superior brevet.

Lieutenant Hagemans took a Henry Farman biplane (70-h.p. Gnome) to a height of 6,000 ft. on the same afternoon.

On the following day Lieutenant Wahis carried out the practical part of the tests for his superior brevet. Leaving Brasschaet, the military aerodrome to which all these notes refer, he flew over the surrounding country for an hour, at a height of 3,000 feet, during which he passed over Antwerp and the Scheldt.

The same afternoon Lieutenant Hagemans flew to the military ground of Saint-Job.—W.

ITALY.

There are two escadrilles (twelve waterplanes in each) of Borel monoplanes in the Italian Navy. Admiral Cagni, who was engaged on the coasts of Tripoli in the recent war, made a long flight as passenger with Captain Aviator Ginocchio on a Borel hydro-monoplane. They covered a distance of over 150 miles without making a descent.—W.

Of the sixteen machines—entered by eight firms—which conformed sufficiently with the military regulations and were thus allowed to go in for the six elimination tests of the International Trials at Turin, only four got through in the time allowed—viz., the month of April.

These were two Bobba monoplanes, one with a 160-h.p., the other with an 80-h.p. Gnome; a S.I.A. mono, which you will remember had flown over from Milan in record time in order to take part in the trials; and a S.A.M.L. "Amphiplane," a biplane built in Italy and fitted with an Aetos engine.

These four, after doing a climbing test, were dispatched on the 9th inst. on the 300-kil. of cross-country flying, which constituted the last and definite proof of their being worthy to be called military aircraft.

The 80-h.p. Bobba, piloted by the very hefty and excellent pilot Sub-Lieut. Rossi, of war fame, and with a passenger on board, got home first, followed by the worthy Amphiplane in the absence of the others, who suffered the one a motor panne, the other a compass trouble. The latter—the S.I.A., with Deroy up—went as far as Brescia before coming down to inquire, doing a fine flight; whereas the big Bobba had to come down for sheer bad luck.

The net results of the trials leave the authorities in a queer position. A manufacturer has won the £4,000 and will presumably have to get the orders which go with it. Is this machine just what the Minister of War requires? It is causing much comment, too, that none of the types officially stated to be the most suitable for service needs, and none of the firms entrusted with the construction of them, have succeeded even in getting themselves "placed."

It will be remembered that an "All-Italian" competition for two experimental escadrilles, one of single-deckers, the other of biplanes of a purely Italian type (a difficult thing to swear to, by the way), was to be held side by side with the more important International Competition. It opened on April 15th and several machines were entered, some from among those already flying in the big trials, others such as the S.I.T., a novel biplane entered by the firm who held the Blériot licences, and a Chiribiri with that maker's new A.C. motor, being quite newcomers.

Owing to the weather and misunderstandings, every one except the S.I.A. got smashed up or retired, and this competition finished very rapidly—almost before it was open, indeed. A few interesting points were to be found among the machines, but as these original vehicles really did nothing at all, I will reserve mention of their particulars for my report of the Aerial Navigation Show just opened at Turin, where they will be exhibited.

In connection with it there will be a flight to Rome, and three monoplanes entered will use the L.U.C.T. If successful, after its good performances on a Wolsit-Nieuport in the trials, this engine's fortune should be made.

Perhaps the most interesting feature of the month, during which the flying world was kicking up its heels and waiting for fine weather to get through a few tests, was the trips made by the escadrille Saint Francesco, composed of six Farmans, and piloted by Capt. Prandoni and his Non-Com. Officers. Regular visits were made to the surrounding towns in full strength, and the military precision, with accuracy of distance and timing, made an excellent impression on the countryside.

To return to our winners, the Bobba, which has about 26 square metres of lifting surface, is an unoriginal-looking monoplane, claiming dynamical efficiency by virtue of the position of its centres, and is certainly capable of flying well. Bobba himself has been such a lot in the French flying quarters that one would expect a good practical aeroplane to issue from his works. I noticed that he keeps up his petrol pressure by a tiny propeller—not, of course, a novelty.

The S.A.M.L. amphiplane—the firm had also a common biplane and a monoplane at Mirafiore—is a tractor two-decker with enclosed fuselage and monoplane tail, propelled by an 80-h.p. V. C. Aetos engine, the arrangement of whose radiators à la Venetian blind along the sides of the body is distinctly striking. It is a machine to be put into the M. Farman category as regards its flying, its gliding and the flexibility of the engine being exceptionally good. The lifting area is 42 square metres. The engines fitted to all three machines of this build did well. They can be started by the pilot from his seat, run dead slow, and until opened out are wonderfully quiet, though no special silencing arrangement was fitted as far as I can remember.

The S.I.A.—these initial titles are as confusing as they are fashionable—which was the only survivor in the "All-Italian" trial, though not very original is certainly fast, and owes its landing gear, at any rate, to Deperdussin latest practice. Its performances made an excellent impression.

The little Gabardini, though it did very little towards passing its tests, took my fancy considerably, and has done a good deal of practical cross-country work.

I add the formal list of the entrants and their "appareils": Caproni—two Bristols, one Caproni 1913, one Caproni 1912 (80-h.p. Gnomes); Bobba—one monoplane (80-h.p. Gnome), one monoplane (160-h.p. Gnome); S.A.M.L.—one biplane, one amphiplane (80-h.p. Aetos); S.I.A.—one monoplane (80-h.p. Gnome); Gabardini—two monoplanes (80-h.p. Gnome); Macchi—two Nieuports (80-h.p. Gnomes); Wolsit—one Nieuport (80-h.p. L.U.C.T.), one Nieuport (80-h.p. Gnome); Roman Aeroplane Works—one monoplane (80-h.p. Gnome).

At a recent presentation made to the Venice hydro-aeroplane section, a successful parade of waterplanes was made and a fly past, at which the dirigible P.2 assisted, added to the success of the function. Two Bréguets, a monoplane and a biplane, were present, and also a Borel and a Ginocchio biplane, this latter a novelty, as well as other well-known types. So varied an assortment would suggest that no decision as to what is best has been come to so far by the naval men. Any-

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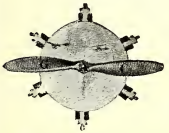
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how, they have the machines—a good score too, counting in the typeless craft in the Spezia district, some of which are first-class fliers, be it noted.

Later I read that the All-Italian part of the trials is declared closed, as no machine came up to the judge's idea of what was needed.

I believe that the Nieuport waterplanes are at Spezia. The Italians seem to be calling their "escadrilles" after the Holy Saints. St. Mark at Venice, St. Francesco and St. Maurice at Turin, for examples.—T. S. Harvey.

NORWAY.

Lieutenant Gvertsen, Royal Norwegian Navy, who is to accompany Captain Amundsen to the North Pole, is now learning to fly at the Deperdussin School at Reims. He has the intention of taking a Deperdussin monoplane with him on the North Polar expedition.—W.

U.S.A.

Lieutenant S. H. McLeary of the Naval Aviation Centre at San Diego, California, flying a Curtiss biplane on April 29th rose to a height of 8,200 feet, thus beating the military height record. He has only been attached for aviation duties since July last.—W.

SIAM.

On May 14th at Villacoublay in the presence of the Crown Prince of Siam, Lieutenant Saldi, Siamese Army, made a flight on a Nieuport monoplane with Mlle. Daligny, who nightly charms the jeunesse dorée of Paris at the Athenée, as a passenger. Aviation is not alone in the affections of the Siamese.—W.

FOREIGN NOTES.

France.

M. Oscar Bider, the Swiss aviator who crossed the Pyrenees in January last, has now carried out his intention of flying over the Bernese Alps. He left Berne at 4.35 a.m. on May 13th and reached Sion, in the Valais, at 6.19 a.m. His average height was about 10,000 feet. He crossed the Alps between the Wildhorn and the Wildstrubel. The wind was favourable throughout. His machine was a Blériot monoplane (80-h.p. Gnome). M. Bider was born in Basel in 1890 and learnt to fly at the Pau Blériot school towards the end of last year.

Mr. Loftus-Bryan, who was for some time at the Blériot school at Hendon, is now at Pau, where he passed the three tests for his aviation certificate on May 7th. His average height was close on 1,800 feet and his glides from that height were made with his motor stopped. Mr. Bryan is the first officer of Irish Horse to become an aviator.

M. Guillaux, the holder of the Coupe Pommery, has apparently a great liking for making flights over Paris. On May 10th he made a further trip on a Clément Bayard monoplane (60-h.p. Clerget rotary). After passing over the centre of the city several times at a height of 7,000 feet he returned to Issy les Moulineaux. On the following day he left Issy early in the morning and flew to La Croix-Saint-Leufroy (Eure) where he landed at nine o'clock. The journey was made at an altitude of 6,000 feet.

M. Alfred Leblanc interviewed with reference to the Bill before the Chamber laying down a series of aerial regulations is antagonistic to them. For one thing, he says, it will put a stop to all long-distance ballooning owing to the difficulty of announcing one's destination in advance. He thinks the prevention of flights over prohibited areas an absolute impossibility. At several thousand feet an aeroplane is practically indistinguishable. He regrets that it has been found necessary to prohibit the carrying of cameras as many people desire to keep some sort of record of their ballooning trips. To him aviation is too new an art or science to be "regulated." His views are those which one would expect from one whose chief interest lies in aviation.

Germany.

Accompanied by Lieutenant Schöfer, Ernst Külme, on an Albatros biplane (100-h.p. Mercédès) carried out an interesting flight on May 10th, starting at about 4 a.m. from Johannisthal to Dresden, where he arrived two hours later. After circling over the town the return to Johannisthal was made. The flying ground was reached by 8.15 p.m., but the Albatros remained aloft till close on 8.30 p.m. Külme flew in all exactly four hours and nine minutes, and as he had a passenger this means a grant of £300 from the National Fund.—B.

Cuba.

The Cuban aviator, Domingo Posillo, succeeded on May 17th in flying from Key West to Havana, a distance of about 110 miles. The Government had offered a prize of £2,000 for this oversea flight, and a cruiser patrolled the course during the performance.

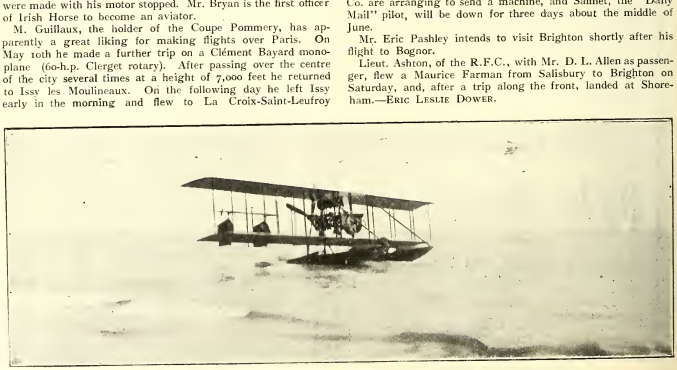
Aviation at Brighton.

The Radley-England waterplane, after waiting in vain for suitable conditions, was towed by motor-boats from Shoreham on Tuesday last week. The journey, which took nearly six hours, was completed satisfactorily and the machine housed in the tent hangar of Volks' Electric Railway. It has been up twice since, piloted by Mr. Gordon England, but on the second occasion the floats sprang a leak.

Mr. Magnus Volk is determined that Brighton shall enjoy plenty of flying during the coming summer. Besides the Radley-England waterplane, a 100-h.p. Avro is expected immediately, to be flown by the mysterious Capt. "X." His visit will last till June. Afterwards, the Eastbourne Aviation Co. are arranging to send a machine, and Salmet, the "Daily Mail" pilot, will be down for three days about the middle of June.

Mr. Eric Pashley intends to visit Brighton shortly after his flight to Bognor.

Lieut. Ashton, of the R.F.C., with Mr. D. L. Allen as passenger, flew a Maurice Farman from Salisbury to Brighton on Saturday, and, after a trip along the front, landed at Shoreham.—Eric Leslie Dower.



The Radley-England hydro-aeroplane off Shoreham.

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Aeronautics in the House of Lords.

It is obviously necessary that the question of Aerial Defence should be as thoroughly ventilated in the House of Lords as in the House of Commons. Though, fortunately, the question of Imperial Defence as a whole is not likely to be obstructed by peace-at-any-price fanatics in the Upper House, it is always possible that so new a thing as aeronautics may be regarded with suspicion by ultra-conservative Peers, and it is, therefore, the more satisfactory to know that we have so warm a supporter as Lord Montagu to advocate the new arm. The following extracts from Lord Montagu's recent speech are taken by his kind permission from the official report, and show how ably he has stated the case for adequate protection against aerial invasion.

Lord Montagu of Beaulieu rose to ask his Majesty's Government whether a Return can be laid upon the Table of the House showing the number of (1) dirigibles, (2) aeroplanes, (3) hydro-aeroplanes now possessed by the chief countries of the world, and the amount of expenditure for military or naval aviation proposed during the year from 1st May, 1913.

The noble Lord said:—My Lords, it is now some time since we had a discussion in this House on this question, and I think I am justified in bringing before you the progress that has since taken place in aviation and the necessity there is for our taking careful note of what the other Powers are doing and preparing ourselves for any emergency. Wonderful progress has been made in aviation during the last two years, and we cannot afford to ignore the developments that have taken place. It might have been said—in fact it was said—in the early days by many persons well qualified to judge, that it would be many years before, either from the point of view of the Admiralty or of the War Office, it would be necessary to take cognisance of what was being done; but I venture to say that the very large, and in many cases very efficient, aerial armaments of foreign Powers make it imperative that the Government of this country should consider the question as it now stands, and also as it is likely to be in the near future.

To-day I invite your Lordships to consider some of the new problems which have arisen since we last had a debate on this subject. We have now to consider what are the chances of sky power being used in the next war. I prefer the term "sky power" to that of air power because it is a more appropriate term. We do not talk, for instance, of water power but of sea power, and I think it would be convenient if in future it became our custom to talk, not of air power, but of sky power. We have now got to the stage in which we have not only to look upon both dirigibles and aeroplanes as a means of scouting, whereby very valuable intelligence can be conveyed to the commander of a fleet or an army, but we have also to consider whether they are not in themselves becoming formidable as a means of offence.

It will be possible for any Power with a powerful fleet to send in front of that fleet dirigibles, and to a certain extent aeroplanes and hydro-aeroplanes, for the purpose of finding out whether they are nearing the enemy's fleet or for finding out the disposition of the enemy's fleet, and whether it consists of battleships, cruisers, or whatever it may be. Any Power which had a sea-board between the Bay of Biscay and the Baltic could ascertain within a few hours where the British Fleet was lying, whether it was at Dover, at Spithead, or in the North Sea, or wherever it might be; and that danger has become a greater one since dirigibles are able to stay in the air a much longer time now than formerly, and attain a speed of anything between forty and fifty miles an hour, a speed which before long, in my opinion, will be exceeded.

Before long, not only will both dirigibles and aeroplanes be used for intelligence work, but possibly for purposes of offence. I do not know whether your Lordships are aware that some of these large dirigibles can take up weights up to ten tons, and it is obvious that if only five tons of explosives were dropped at inconvenient places it would produce a state of dismay and a scene of ruin which could hardly be paralleled by any artillery work. That is a new and a serious problem which we have to consider. To civilised life nerves are as important as muscles. Our complicated civilised life is dependent upon the smooth and automatic working of transport or means of communication, banks, the Stock Exchange, telegraphs and telephones, the distribution of food, and so on, and if those were to be interfered with you would have a state of panic, and you might have a condition of things in which a revolution, a social uprising, would take place which would be difficult to quell, and which would add to the horrors of war. An inland town like Birmingham or Leicester is just as vulnerable now as is London or Portsmouth.

It is said by those who wish to minimise the danger, that we have a few good guns which can shoot vertically, and which would be able to bring down dirigibles from the sky in the same way as noble Lords are able to bring down pheasants over trees. It may be possible that sooner or later we shall have some form of shell bursting in the air at a considerable altitude which could make a serious attack on dirigibles and aeroplanes, but that is some way off, and if the information is correct which I get from France and Germany, where a great deal of special attention has been given to guns versus dirigibles, it is only for very local and partial purposes that we can reckon on artillery to combat dirigibles or aeroplanes. I do not deny that we might have the great dockyards and certain other areas covered by special guns. It is conceivable that we might protect the locality of the Government offices at Westminster and the great arsenals in the same way, but it would be impossible to count on artillery as an entire means of defence against anything that might come through the air.

There is only one proper way of meeting this new situation. We must meet like with like. If there is danger in the future of our being invaded by dirigibles or aeroplanes, we must have an adequate number of both kinds of aircraft in order to defend ourselves.

I know it may be said that criticism without suggestions is a barren method of controversy. Therefore I am going to be bold enough to submit some suggestions for the consideration of the War Office and the Admiralty. I think we must all admit, especially in the matter of dirigibles, but also in the matter of aeroplanes, that we are greatly behind every other first-class Power. Whether that is a disadvantage which can be rapidly remedied I am not prepared to say at the moment. I am inclined to think it can be to a large extent. But just as we were behind in the early days with regard to motor-cars we are behind in a similar way now. As a nation we are deficient in imagination, and inclined to be too complacent. In regard to this question of aerial invasion or sky power, given trained pilots it would not take us very long to build an adequate air fleet; and, from the money point of view, we can get 2,400 aeroplanes for the cost of one super-Dreadnought, and you could get a very great number of dirigibles for the same money; so that even if we urge on the Government as some of us do, that a sum greater than the £500,000 which has been promised should be spent this year, we are not asking for innumerable millions.

The question of pilots is one of the difficulties which we have to face, and it is not easy to see how we are going to obtain more. I think that better financial terms might be given them, and I suggest that something in the nature of the French system might be considered. Under the French system not only do officers and men who engage in this work receive special pay, but in addition they have a gratuity for the number of hours they are in the air and the work actually done. This amounts to a considerable sum in many cases, and constitutes a great inducement to men who have to consider the financial side. Another most important addition would be in the direction of training schools, of which I do not think we have half enough.

Before I pass on, may I pay a tribute to the Admiralty, who have been on the whole a great deal more energetic than the War Office, and I believe that the new stations which they have established at different points on the coast for their hydro-aeroplane service will be most useful. I press upon the Government very earnestly the necessity of having more aeroplane stations, and of making arrangements for the training of more

Aeronautical Society Reading Room

pilots. Besides that we want a great many more hangars and more housing accommodation. Supposing the Government were to order a couple of hundred more aeroplanes to-morrow, they would have to put up housing accommodation at the present moment.

We must realise that we are only at the beginning of huge developments in this direction, and His Majesty's Government will be well advised if they give the whole subject, both by land and sea, their most careful and serious consideration.

The National Aerial Defence Association.

The first business meeting of the promoters of the National Aerial Defence Association was held at the Mansion House on Wednesday, May 14th, with the Lord Mayor in the chair.

The draft constitution prepared by the Aerial Defence Committee of the Navy League was discussed, and, with certain amendments, adopted. The Lord Mayor, Lord Blyth, Sir George Wyatt Truscott, and Mr. Ernest Kennedy (one of the managers of the Stock Exchange) were appointed trustees of the National Aerial Defence Fund.

The Master of the Guild of Freemen, Mr. George Briggs, wrote inviting the Association to make arrangements for a public lecture in the City, in order to advance its objects. Applications were received from several cities and towns asking for the assistance of the Association in the arrangement of public meetings.

It was decided that the Grand Council of the Association should comprise the Lord Lieutenants, Lord Mayors, Lord Provosts, Mayors, and Provosts of the United Kingdom, members of both Houses of Parliament, subscribers to the Fund, and certain other gentlemen to be added by the Lord Mayor in consultation with Lord Blyth and the Executive Committee of the Navy League. It was also decided that the Executive Committee of the Association should consist of the members of the Aerial Defence Committee of the Navy League, with certain other gentlemen whose names were added at the meeting.

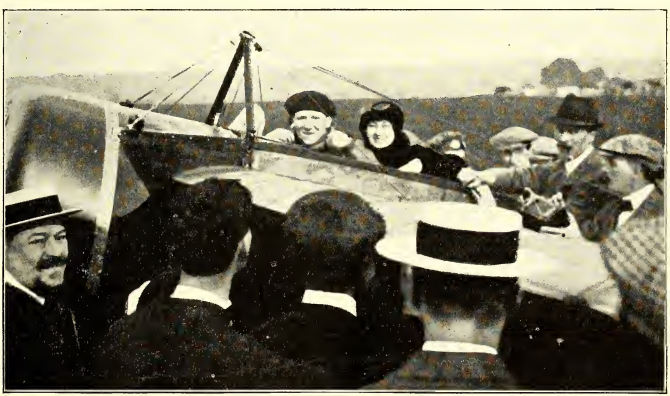
The complete committee is now as follows:—The Lord Mayor (chairman), the Earl of Leicester, Lord Desborough, Lord Charles Beresford, Lord Ampthill, Sir Edward Beauchamp, Mr. Stanley Machin, Captain Acton Blake, Admiral of the Fleet Sir Edward Seymour, Admiral Sir John Hopkins, Major-General Ruck, General Arbuthnot, Mr. Stuart-Wortley, M.P., Sir George Pretyman, Mr. Robert A. Yerburgh, M.P., Mr. Alan Burgoyne, M.P., Captain Faber, M.P., Mr. A. Paget, M.P., Mr. Lionel de Rothschild, M.P., Mr. Joynson-Hicks, M.P., Lord Montagu of Beaulieu, Mr. Herbert A. White, Mr. R. D. Blumenfeld, Colonel Massy, Colonel Welby, Mr. V. Briscoe Tritton, Mr. A. E. Berriman, Alderman Sir George Truscott, Mr. C. G. Grey, Mr. J. H. Ledeboer, Mr. B. A. Strauss, Colonel Templer, Mr. C. C. Turner, Mr. J. H. Watts, Mr. W. E. de B. Whittaker, three representatives of the Royal Aero Club, and three representatives of the Aeronautical Society. Mr. V. Briscoe Tritton was appointed the treasurer, and Mr. P. J. Hannon the hon. secretary.

An Expensive Lesson.

Continued immunity from fire tends to breed a certain degree of forgetfulness, and the notice which appears in most hangars to the effect that smoking is strictly prohibited has become something like a dead letter. It would be well for those who have charge of these highly inflammable buildings, and their still more inflammable contents, to take warning from a £5,000 lesson which was given at Hempstead Plains flying ground, near New York, when five hangars and seven machines were destroyed, owing to the misbehaviour of a petrol flare. Fortunately, there was little wind, and this counted two on a division, for most of the machines present were out in the open for practice, and there were many other sheds within flame-distance if the wind had been sufficient to carry the fire across.

Rival Mechanics.

An uncommon police court case occurred the other day. M. Gondre, who is Mr. Hamel's personal mechanic, was charged by a former mechanic of Mr. Hamel's with stealing from a chest certain tools which he alleged belonged to him. As a matter of fact, these tools were removed by M. Gondre on Mr. Hamel's instructions, and were actually the property of Mr. Hamel himself. When Mr. Hamel's evidence to this effect was given at the adjourned hearing of the case the magistrate dismissed the charge at once with some strong remarks on the personal feeling which instigated the bringing of the charge.



M. Brindejonc des Moulinais and Mrs. Crane on his Morane-Saulnier monoplane after his attempt on the passenger altitude record on Saturday last. Mr. Harry DelaCombe and Captain Tyrer may be seen inspecting the barograph.

Flying at Hendon.

A great concourse of people, estimated at fully 20,000, assembled on Saturday at the London Aerodrome, many of them attracted, probably, by M. Brindejonc des Moulinais, his 80-h.p. Gnome-Morane-Saulnier monoplane, and the rumour that the two of them, with a passenger, were going to make an attempt on the British height record. The attempt was made, and a very fine effort it was, the monoplane, with its peculiarly sensitive wings, rising very steeply and with great speed. His barographs showed, respectively, 9,800 ft. and 10,400 ft., so that even when checked it is almost certain that he failed to reach the altitude gained by Mr. de Havilland at Salisbury Plain last August—namely, 10,560 ft. Incidentally, M. Brindejonc beat M. Salmet's Hendon record of 9,700 ft. made in November, 1911.

Two races were flown during the afternoon, the first being a cross-country handicap of 16 miles, to Elstree and back twice. For this event there were six entries. Sig. Nardini, in his 50-h.p. Gnome-Deperdussin, started scratch; Mr. Slack, in a 50-h.p. Blériot, received 1 min. 55 secs.; Mr. Pickles, who had flown the 50-h.p. Gnome-Handley Page monoplane back from Winchester during the morning, received 2 mins. 20 secs.; MM. Verrier and Noel, each in a 70-h.p. Renault-M. Farman biplane, started together with an allowance of 2 mins. 50 secs; and Mr. Lewis Turner, in a 60-h.p. Anzani-Caudron biplane, received 4 mins. 20 secs.

Mr. Slack gained first place, his flying time for the double journey being 23 mins. 27 secs. Mr. Turner came second in 23 mins. 51 secs., and Sig. Nardini third in 23 mins. 53 secs.

The second race was a speed handicap in two 6-lap heats and an 8-lap final. In the first heat Sig. Nardini won from scratch in 10 mins. 17 secs. M. Verrier camé second in 10 mins. 39 secs., having 40 secs. start; and Mr. Turner came last in 10 mins. 59 secs., with a start of 1 min. 40 secs. In the second heat M. Noel, with a start of 22 secs., came first in 10 mins. 46 secs. Mr. Slack came second from scratch in 10 mins. 52 secs.; and Mr. Whitehouse, flying the Handley Page, came third in 11 m. 4 s., having received 49 s. start.

The final was flown in half a gale, which had risen within a few minutes from dead calm to a speed of 40 m.p.h. This upset Sig. Nardini's start and very nearly upset his machine as well, wherefore he retired with a slightly damaged wing-tip. Mr. Slack also retired after a short flight, and the race remained to MM. Verrier and Noel on the two Maurice Farmans, the latter receiving a start of 8 secs. over the former, and winning with a flight of 15 mins. 15 secs. against M. Noel's 16 mins. Both had a terrible shaking, as the wind was abominably gusty as well as being strong.

Besides the racing, many interesting exhibition flights were made, Mr. Hamel performing in his 50-h.p. Blériot and Lieut. Malone, R.N., taking an 80-h.p. Caudron for an extended flight at a considerable altitude. His handling of the machine was excellent, but just as he was about to land an inlet valve blew out, the charge fired back and set light to the petrol jet and the lower plane. Fortunately, he was only some 30 ft. up, and got down in time to extinguish the fire, but it should be a lesson that all engines should be fitted with throttles, instead of being cut in and out with the switch and petrol tap, for by the latter method the petrol flows while the engine is switched off, and in the case of a blow-back there is a quantity of inflammable vapour about ready to catch fire. Some day someone in this country will be burnt alive in the air, and then there will be a public outcry and an official inquiry, all of which might be avoided if the authorities took proper steps at once and refused to allow the use of engines which cannot be throttled.

Passenger flights seemed to be more numerous than ever, the demand being even greater than the supply.

Despite a high and cold wind, and sharp hail-showers, there was quite a fair crowd at Hendon on Sunday, though the various "footlight favourites" who were to have collected for sweet Charity's sake were mostly notable by their absence. Probably they would not have collected much if they had been there, as the crowd was chiefly in the shilling enclosures, showing what is becoming increasingly evident—namely, that the most intelligent interest in aviation is taken by the least wealthy classes.

The first up was Mr. Noel on the G.-W. Maurice Farman. He had a distinctly bumpy journey for some ten minutes, being continually thrown out of his seat, as he chose to turn out just between two storms. M. Verrier came out soon afterwards and flew with all his usual skill. Mr. Grahame-White made a couple of flights, showing that he handles a Maurice Farman even better than he did the older Henry Farmans. In one trip he carried Miss Ethel Levey as passenger, this being the clever little lady's baptism of the air. Afterwards, Mr. Slack on his 50-h.p. Blériot, and Mr. Sydney Pickles on the 60-h.p. Caudron, flew a private match over the cross-country course to Elstree and back, Mr. Pickles receiving 1 min. 12 secs. start and winning by 3 secs. After crossing the line, Mr. Pickles went up to about 3,000 ft. and came down with a very fine spiral. Mr. Slack also did some pretty flying, finishing with a faultless landing. Altogether, the exhibition was excellent, and again showed how certain one may be of always seeing good flying at Hendon.

M. Brindejonc's Experiences in England.

On Thursday of last week M. Brindejonc des Moulinais was haled before the magistrates at Bow Street and prosecuted under two charges; firstly, for not notifying his intention of landing in this country, and, secondly, for flying over prohibited areas, namely, at Dover, Purfleet and Woolwich instead of landing in a prescribed area and reporting himself. He pleaded that he has flown over so many countries that it was impossible for him to familiarise himself with the laws obtaining in all of them and that the next time he came in this country he would be more careful. The magistrates decided the case in an eminently sensible manner, merely binding him over on his own recognisances in the sum of 1,000 francs to come up within twelve months for judgment if called upon, which practically meant letting him off with a caution unless he misbehaves himself again.

During the past week M. Brindejonc has been quite busy despite the unfavourable weather. On Tuesday of last week he took up Mr. Grahame-White and also Mr. Gates as passengers—one at a time, of course—although the 80-h.p. Morane-Saulnier is really built as a 50-h.p. single-seater. Mr. Gates told the writer that seated close up behind the pilot one had an excellent view over the front of the machine, and, of course, by doing a banked turn one would be able to see practically vertically below one so that the machine evidently has merits as a single-seater for strategic reconnaissance.

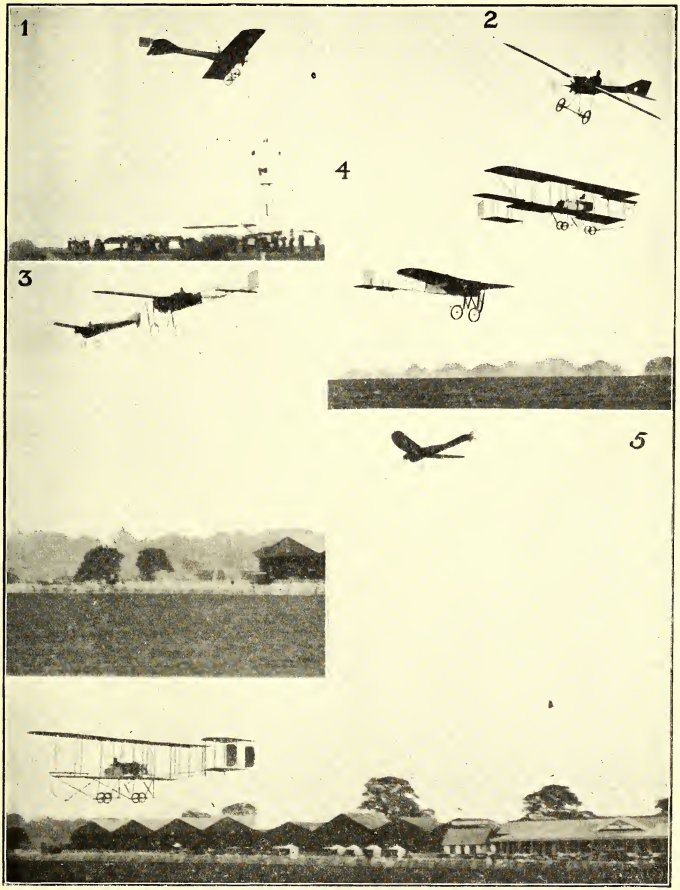
On Wednesday, M. Brindejonc flew the machine to Farnborough, where she was put through the official tests by employees of the Royal Aircraft Factory. There was a very bad wind at the time, but in spite of it she showed a high speed of 80.6 m.p.h. and a slow speed of 51 m.p.h. over the measured course. The latter naturally can be very much reduced in a calm, and further it is worthy of note that it by no means represents the speed at which she lands, it is simply the speed at which she can go on flying. During this test she was carrying fuel for four and a half hours and was loaded up to represent the weight of a passenger.

In the climbing test, when Lieut. Winfield-Smith was carried as a passenger along with three hours' fuel, she reached 3,300 feet in nine minutes, which was uncommonly good climbing.

On his return journey, M. Brindejonc appeared in sight of Hendon at a height of 9,000 feet, and in descending his engine stopped at 8,000 feet and refused to start again. Owing to the east wind he was unable to glide right into the aerodrome, and consequently he landed in a small rough field between Colin Deep Lane and the Welsh Harp without damaging either the machine itself or any of the animals occupying the field, which is a testimony not only to the skill of the pilot, but to the quick way in which the machine can be pulled up.

On Sunday morning he left for France with M. Saulnier as passenger. They reached Calais in an hour, but turned over on landing in soft ground and smashed the machine. The crossing of the Channel took only 13 minutes.

Some Impressions of Aeroplane Racing.



May 17th at Hendon.—1. Sig. Nardini (Deperdussin 50-h.p.) winning his heat of the Speed Handicap. 2. Sig. Nardini cornering. 3. Mr. Slack (Blériot 50-h.p.) chasing Mr. Whitehouse (Handley Page, 50-h.p.). 4. Mr. Slack catching Mr. Noel (M. Farman, 70-h.p.) in the cross-country race. 5. Mr. Noel passing under Mr. Whitehouse in the Speed Handicap.

Prince Henry Circuit. 1913.

The big event of the German year, the Prince Henry Circuit, has come and gone before these lines appear, taking its course from Wiesbaden to Strassburg, with military reconnoitring flights on the last two days. The route that was followed was Wiesbaden-Cassel, 100 kilometres, with a landing at Giessen; Cassel-Coblenz, 170 kilometres, a rest day at Coblenz following. A new start was made on May 14th with the journey from Coblenz to Karlsruhe, 200 kilometres, again followed by a rest at Karlsruhe. The Karlsruhe-Strassburg stage included a scouting trip to Stuttgart and Pforzheim, which was open to aviators not taking part in the circuit, and on May 17th the event wound up with a journey from Strassburg to Freiburg and back with a landing at Neu-Breisach, where reconnoitring tests were to take place. The entries, with reserves, for the circuit itself comprised twenty-four, but mounted up to thirty-seven when the participants for the purely military features were counted in. The machines entered by the military did not need to be "taken off," but all privately entered were obliged to undergo this measure, and the spectacle at Wiesbaden was watched with much interest and no little amusement, when men of the character of Hirth, Germany's most brilliant aviator, Thelen and several officers noted as eminent pilots, had to pass a stringent practical test as to their flying capacity because their machines did not belong to the "aeroplane convention." Unfortunately, however, an accident happened to Hirth which annulled all his hopes of again winning the circuit, for last year he covered the various stages hours ahead of all other competitors. Hirth, who has left the Rumpler firm for the Albatros Works, had constructed a very last Albatros-Hirth monoplane, with a 75-h.p. six-cylinder steel motor for the event, and in attempting to start it for the taking-off flight, the machine sideslipped when at an altitude of eight yards and fell on to the right wing, which was totally smashed. Fortunately, both Hirth, who crept into the body of the machine when he felt it slipping, and Lieut. Palmer, were hardly hurt at all.

The start of the first stage, Wiesbaden-Cassel, was to take place at 4 a.m. on May 11, but as it had pelted all night and still rained, it was 7.30 before the men were let off, eighteen being sent off on the journey, namely, Lieutenants von Hiddessen (95-h.p. Mars monoplane), von Beaulieu (95-h.p. Albatros biplane), Canter (75-h.p. Rumpler-Dove), Sommer (80-h.p. Euler biplane), von Thuena (95-h.p. L.G.V. biplane), Hailer (100-h.p. Otto biplane), Engineer Schlegel (100-h.p. Aviatik monoplane), Lieutenants Engwer (100-h.p. Gotha monoplane), Zwickau (75-h.p. Mars monoplane), Donnevert (100-h.p. Rumpler-Dove), Engineer Suvelack (95-h.p. Condor monoplane), Lieutenants von Haller (100-h.p. Otto biplane), Blutgen (95-h.p. Mars biplane), Vierling (100-h.p. Otto biplane)), Joly (75-h.p. Gotha monoplane), Engineer Thelen (95-h.p. Albatros biplane), Lieutenant Kastner (95-h.p. Albatros-Dove), and in the afternoon Lieutenant Carganico (100-h.p. L.V.G. biplane) was sent off. Lieutenants Linke (100-h.p. Aviatik biplane) and Weyer (100-h.p. Aviatik biplane) had both smashed up during practice spins, whilst the Goedecker monoplane, to be steered by a civilian, did not materialise, and Lieutenant Coerper (100-h.p. Jeannin Steel-Dove) could not get his motor to work in time and was left behind. Thirteen of the eighteen arrived at Cassel on time. Lieutenants Vierling and Hailer, of the Bavarian contingent, who had to land owing to motor troubles en route, both had accidents in landing and gave up—a remarkable coincidence. Suvelack lost his way near Worms and returned to Wiesbaden to make another start, arriving at Cassel in the evening, whilst Lieutenant Sommer spent the night in the open fields owing to a panne and got into Cassel whilst the other competitors were going off on the second stage to Coblenz.

The weather on May 12th was more favourable for flying, twelve men being sent away, for Lieutenant Donnevert broke his Rumpler-Dove at the start and had to mend it, whilst the little colony of unfortunates of the first day commenced to straggle into Cassel and make a start for Coblenz. Lieut. Engwer (100-h.p. Gotha monoplane) smashed up completely on the way to Coblenz, whilst Coerper and Donnevert were more fortunate. Grade, who started hors concours, had several accidents near Giessen and dismantled his machine. On landing at Coblenz, where the ground was in very bad condition, various machines were knocked about. Thelen, who arrived as first man home in barely two hours' time, having started from Cassel at 8.52 a.m., reaching Coblenz at 10.38 a.m., broke his landing chassis in a rut, and other competitors were equally "fortunate." The rest-day on May 13th was used for a general repairing of breakages and a closing up of the ranks, as the laggards slowly dribbled in.

The Coblenz rest-day, May 13th, brought the number of aviators arriving up to fourteen. Lieutenant Sommer had a very bad smash-up near Nassau and was taken to hospital, where he lies in a very precarious condition. His passenger, Lieutenant von Beers, was not harmed beyond a few bruises. Lieutenants Donnevert and Engwer withdrew from the contest itself, but were desirous of competing in the military events.

May 14th witnessed the start for Karlsruhe, 320 kilometres, via Kreuznoch, Mainz, Frankfort and Heidelberg, without official intermediary landings. All fourteen aviators were sent off, but until midday only two had arrived, namely, Lieut. von Hiddessen, who left Coblenz at 4.47 a.m., and Stiploschek, 6 a.m. Al the others had been forced to land en route, some, such as Beaulieu and Coerper, at Mainz and Frankfort, others, Kastner and Thuna, a few miles out of Karlsruhe. Up to eight o'clock at night there arrived further Lieutenants Canter, Joly, Carganico, Coerper, von Beaulieu, Kastner and Engineer Thelen.

Thursday was a rest-day, when numerous repairs were effected. Lieutenant von Thuena, who smashed up badly just outside Karlsruhe, was hard at work mending his machine, and Lieutenant von Haller travelled to Munich to fetch a new biplane, in order to participate in the purely military part of the event, which commenced on Friday with the start for Strassburg. So far, there was little satisfaction in aviation circles at the trend of matters, the continuous accidents in landing and forced landings giving rise to somewhat unfavourable opinions.

Friday, however, rectified this, for strengthened by the aviators entered for the military flights only, twenty-two men set off for Strassburg, via Stuttgart and Pforzheim, where the messages the officers carried and those which they had to write en route, with sketches attached of the opposing army they were watching, were collected. All the aviators landed at Pforzheim and then reascended for Strassburg, where seventeen arrived in rapid succession. The weather was fine, but broke during the night, and at the hour set for starting on May 17th, 4 a.m., the rain came down in torrents. The task set was to reconnoitre the neighbourhood near Freiburg, returning via Neubreisach to Strassburg, 225 kilometres. Of the fourteen who left Strassburg at 5 a.m. eleven reached Freiburg before eight o'clock.

The First Public Landing-Ground.

Local enthusiasm for aviation is not confined to Liverpool. Mr. E. F. Melly (a brother of Mr. H. G. Melly, of Waterloo), who was the second Mayor of Nuneaton, has arranged with a certain farmer in the vicinity of that town for the use as a landing ground of a flat field about 300 yards square. Mr. Melly will build at his own expense, a hangar, 50 ft. by 50 ft., which will soon be ready for the convenience of any visiting aviator who wishes to use it. The owner of the ground will make a very small charge for landing. The roof of the hangar is to be painted back and white in six-foot stripes, so that the landing ground may be easily identified from above. Mr. H. G. Melly has visited the ground, at the request of the Royal Aero Club, and has certified it to be suited to its purpose.

Flying at Park Royal.

Aeros, Ltd., are organising an Empire Day Carnival at Park Royal on Saturday, May 24th. Biplane and monoplane exhibition flights will be given, and there will be balloon ascents and parachute descents, weather permitting.

The Liverpool Aviation School.

You take an electric train from Exchange Station; in sixteen minutes you alight at Waterloo—a hydro-suburb, as it were, of Liverpool—then you notice a small boy cleaning a large shop window, and you inquire the way to the Liverpool Aviation School; he tells you, in a rich Irish brogue, to go down to the shore and keep on turnin' to the right until you come to two large sheds with four spoons flyin' in the wind. With luck, you will encounter Mr. H. G. Melly, the proprietor of the establishment, and within five minutes you will come to the conclusion that he is a person under whose feet grass will never thrive. He is the restless sort of individual who cannot scrap things; if he were to find a carburettor in the road he would have to construct a motor-bicycle to fit it. Two Blériot wings, for instance, were once going to seed in a crate beside the hangars. The circumstance tended to keep him awake at night; eventually he had to build a 35-h.p. Anzani-Blériot to them. This is the excellent machine upon which his pupils now take their brevets. One could multiply examples of this kind by the score.

The gadget-fiend, of course, is a familiar type among persons of mechanical mind, but the man who can coax a condemned bucket and two deceased oil-cans to supply sufficient acetylene gas to illuminate two hangars and a workshop is no ordinary example of the species. Mr. Melly's gadgets work, and not only is his establishment full of them, ranging from door-gears to a most ingenious emery-wheel, but the machines themselves are replete with them. The main object at the back of all these ingenious devices being economy of labour—for Mr. Melly is a believer in the one-man idea. For example, even if one can afford to keep half a dozen mechanics to send off an aeroplane, one cannot carry them away to any old field wherein one may be forced to land; therefore, on the tail-booms of these Waterloo machines, one discovers certain little coils of rope lashed with naval precision; these are "spares" for the Melly release-gadget. On the aforesaid home-made Blériot there is a bicycle pump firmly mounted beside the pilot and connected with an elusive system of tubing and cocks; the idea is that one never quite knows when and where pressure may be desired; by this means petrol may be raised from an auxiliary tank to the main supply tank; lubrication may be stimulated, and heaven knows what else that pump will do—it might self-start the engine.

Mr. Melly's aerodrome is the seashore of England and Wales. Occasionally the sea comes up and eliminates that portion of it which adjoins the hangars, and then the returning aviator has to tie up to the New Brighton tower and wait for the tide. These things add interest.

Two other Blériot monoplanes occupy the hangars—a 25-h.p. Anzani school machine and a 50-h.p. Gnome side-by-side two-seater of the "Big Bat" type, with its extensive empennage, the second machine of this type to appear in England. Many are the adventures which Mr. Melly has shared with this interesting machine. On the occasion of his longest cross-country flight the engine, during the return journey, began to tire, and Mr. Melly found himself jumping trees and navigating tortuous railway-cuttings—a state of things which, in his own mild phrase, "could not last." Ultimately he had to jettison his passenger, hatless, in a muddy field—and so home. Yet the passenger is still his friend.

Mr. Birch, who is, perhaps, the best known of the Waterloo pilots, has also had his adventures. The stopping of an engine over the Mersey, for instance, suggests alarming and wet possibilities; but Mr. Birch was not disturbed: he contrived to land on a golf course and proceeded to write a little epic about the incident, for Mr. Birch is the Poet-laureate of the Liverpool school; then, after a readjustment, he set forth again and got on to the next green in one, after which, yielding to the jealous representations of other golfers, he decided to relinquish the contest and came home by motor. Air-life is interesting at Liverpool.

For the rest, one leaves those spotless and ship-shape hangars at Waterloo with the impression that the Liverpool Aviation School is a force which is going to be exceedingly useful to the promoters of the latest Liverpool enterprise, and that Mr. Melly is a "live wire."—A. B.

Cross-Country Work at Liverpool.

On Sunday the 11th, Mr. Birch started out at 6.30 on the Melly-Blériot to fly to Beeston Castle. After getting height he headed straight across the river to the Cheshire side, but the head wind was so strong that at the end of 40 minutes he had only progressed six miles, so he returned to Waterloo, being in the air altogether 45 minutes. In the afternoon, the wind having calmed, Mr. Birch started again, and reached almost the same spot as in the morning, when the engine lost power, probably through overheating and he was a successful descent on the Wirral Ladies' Golf Links. After examination of the engine another attempt was made, but the engine did not seem to give out its power, and Mr. Birch wisely decided to land on another part of the same links. Although both landings were forced ones, and the second ended in a bunker, only three fuselage wires were broken. The machine was dismantled and housed in the motor garage of Mr. H. Bickerstеth, whose generous help and hospitality were much appreciated, and on Tuesday it was towed home and re-erected.

At the Yorkshire Aerodrome.

On Whit Monday and Tuesday, Mr. Harold Blackburn gave exhibition flights before a large crowd of Leeds and Wakefield people. He flew a new 50-h.p. Gnome Blackburn, which was flown for the first time on Monday. Rising 1,000 feet, he circled the Aerodrome and surrounding country. There was a strong, gusty wind blowing at the time, and occasionally when flying against the wind, his machine appeared almost to be at a standstill. Two fairly long flights were made on the Tuesday, flying on one occasion across country in the direction of Wakefield. On Friday he made a tour round the outskirts of Wakefield, flying all the time at about 2,000 feet, so that from any quarter of the town one had a clear view of the machine. A glide into the Aerodrome ended the flight.

Flying at Debenham.

On Whit-Monday, Mr. J. L. Hall gave several exhibition flights on his Radley and Moorhouse Blériot monoplane (50-h.p. Gnome) at Debenham, Suffolk, in connection with a local fête. A crowd of about 8,000 people assembled from the surrounding district, drawn by the fact that this was the first time an aeroplane had been seen there. Mr. Hall flew excellently in a very gusty wind, and on the termination of the flights the crowd broke through the ropes and acclaimed the pilot enthusiastically. Mr. Moore, the chairman of the committee, thanked Mr. Hall for his fine display, and Mr. Hall made a brief but graceful reply. He was escorted from the field by a cheering crowd.

A Business-like Exhibition Flier.

Mr. B. C. Hucks, whose name is well known to all interested in aviation gave a singularly successful exhibition at Burghley Park, Stamford, on Whit Monday.

Although Stamford has normally only a population of 9,000 odd, no fewer than 8,000 (most of them attracted from the neighbouring towns) paid for admission to the flying ground. The weather on that day could not be called eminently suitable for flying, for the wind was doing a humble 35 miles per hour, and although it was a holiday, Jupiter Pluvius was not treating it as such.

It was announced previous to Whit Monday that Mr. Hucks would fly at 2, 3, 4, 5, and 6 o'clock, and it says something for his reliability as an exhibition flyer that on each occasion he set out punctually on the tick of the clock.

During his longest flight he ascended to over 4,000 ft., from which level he returned in an impressive cork-screw glide. [By the way! A cork-screw glide is not a new ragtime creation.—Ed.] So impressed were the spectators with his flying that, on the completion of the day's work Mr. Hucks had no fewer than four inquiries to fly at other towns.

In order to cope adequately with the correspondence that Mr. Hucks is receiving in connection with flying engagements this year, he has opened offices at 166, Piccadilly.

The first three days of this week he flew successfully at Sleaford. On the 29th inst. he is booked to fly at Peterborough, and thence he goes to Nottingham, where he will give a display in connection with the Nottinghamshire Agricultural Society's meeting on June 4th and 5th.

The Fuel Problem.

On May 14th a number of people interested in internal combustion engines were asked to dine with Lord Montagu of Beaulieu at the Savoy Hotel to meet Mr. Doherty, an American inventor, who wished to put forward certain ideas he has evolved on the subject of fuel for motors.

Mr. Doherty said that he could suggest a number of methods of getting over the existing shortage of petrol, as, for example, by the employment of engines of the Diesel type, and by economising petrol in using a two-stroke injection-fed engine instead of one operating on the ordinary Otto cycle, but these would need such radical alterations in existing power plants that what he would suggest as an immediate remedy was increasing the present supply by utilising the benzol in ordinary town gas.

He pointed out that gas companies were originally formed to supply illuminants, and that illuminating gas depended on burning the carbon particles existing in hydro-carbons. Subsequently gas was supplied for power purposes, and was then used for incandescent mantles, so that what was now desired was gas of high heating value, and not of lighting value. He thought that most cities used 50 per cent. of their gas for power, 45 per cent. for incandescent mantles, and only 5 per cent. in the old-fashioned bat's-wing burners. He believed that all the benzol existing in gas could be scrubbed out, and that the scrubbing would result in 2½ gallons of benzol being acquired from each ton of coal used in making gas. On this scale the gas supply of London alone would give twelve million gallons of benzol per annum, and that the whole gas supply of the country treated in the same way would give 60 per cent. of the motor fuel needed by the country.

So far as power plants were concerned, the benzol in the gas was a nuisance, because it precipitated in the pipes in cold weather, and then evaporated in the warm weather, which caused carbon deposits in gas engines, so that gas was better without the benzol. One could also get motor spirit by a process of destructive distillation (commonly known as the "cracking" process) from fuel oils. The value of the spirit produced was always less than that of the other products involved; consequently, motor spirit would always be a bye-product. Gas companies were better fitted to produce it than anyone else, because they were best able to market the other products, and they could easily produce it if it were possible to repeal the present standard of gas candle-power, which really existed solely for the 5 per cent. of people who were still stupid enough to use bat's-wing burners. He also suggested that coal gas could be used for motor 'buses and taxis which operated within a limited radius, as it would be possible to compress into a cylinder 1 ft. diameter by 5 ft. long sufficient coal gas to drive a taxi 25 miles. He wished to drive home the particular points that petrol for petrol's sake was impossible, that there was a real famine in motor spirit coming.

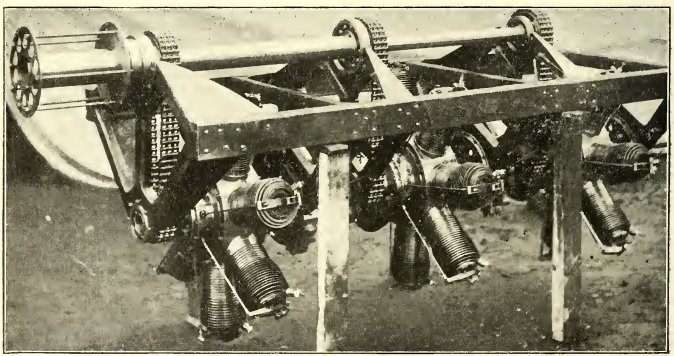
Professor Butterfield said that benzol vapour was responsible for 6 or 7 per cent. of the heat in town gas. If the benzol was extracted the companies would have to supply more gas for the same money to compensate the users. The works cost of gas was about 10d. per 1,000 cubic feet. He reckoned that the amount of gas to be made up to users in compensation would cost about 1s. per ton on the coal, and in return the gas companies would get about 2½ gallons of benzol.

Councillor Kaye, Chairman of the Manchester Gas Co., said that Manchester had been producing benzol from coal for some years as an aid to the aniline dye industry. He said that he had recently seen in Germany a Diesel engine built entirely of phosphor bronze for a German submarine, and that this engine was so designed that it could be reversed from full speed in five seconds. He thought this was a distinct advance in Diesel engines, and showed that the type was worth developing still further.

The writer ventures to suggest that Councillor Kaye has here touched on the real solution of the fuel problem. On more than one occasion it has been pointed out in this paper that so far as aeroplanes are concerned the petrol engine is altogether wrong, chiefly on account of the danger of fire, and in a less degree the same objection to the petrol engine applies to motor cars. Undoubtedly we are at the present moment up against a petrol famine owing to the fact that motor cars are being produced very much more rapidly than the supply of petrol as a by-product can possibly increase.

The aeroplane engine-maker who really wants to make a fortune will do very much better to turn his attention to the production of an injection-fed engine, using heavy fuel, and running on the two-stroke principle.

If the production of such an engine merely meant the saving of human life, its existence would be justified, but it would never come into existence. The writer's confidence in its ultimate success is the fact that it means the saving of money, which now, as always, is more important than human life.



The power plant of the Radley-England hydro-biplane (three 50-h.p. Gnome engines coupled driving a propeller shaft through silent chains). The fitting was made by Messrs. Hesse and Savory.

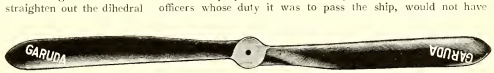
AERONAUTICAL SOCIETY READING ROOM.

A New Idea in Propellers.

Practically minded visitors to the Aero Show at Olympia in February cannot fail to have been considerably struck by an exhibit of propellers shown by the Garuda Propeller Co. Not only was the finish of the propeller exquisite, but the shape was distinctly novel. Looking at the propeller from the front view it strikes one at once that the blades are extremely narrow, but otherwise it does not appear extraordinary. When, however, one looks at the edge one sees that the tips of the blades have a distinct forward trend, so that the propeller, taken as a whole, appears to have a pronounced dihedral angle.

The reason for this is decidedly ingenious. When one comes to consider the matter one easily realises that in an ordinary propeller thick at the boss and thin at the tips with narrow blades there must be a certain amount of power lost through the tip of the blade whipping forward under full load, so that if the pitch is correct while the propeller is undeformed it must go wrong when it is in a state of deformation. In the Garuda propeller the whole blade is designed so that when the propeller is running at full speed the centrifugal force of the comparatively thick blades tends to straighten out the dihedral angle between the blades and so counteracts the forward pull.

In this way it is claimed that the bending pressure of the pull is to a large extent cancelled out by the centrifugal pull backwards, so that the chief strain on the blade is a direct centrifugal tension on the fibre of the wood, which is better suited to stand such a load than it is to stand a bending strain across the blades As the blades are deliberately constructed with a certain amount of elasticity it is also claimed that they adapt themselves better to changes of wind velocity and to gusts, and a further point is made in that because of its springiness the propeller is less likely to be strained and either broken or put out of correct pitch by unequal running of the motor.



Front and side views of the Garuda propeller.

The claims made for the propeller seem to have been thoroughly substantiated in Germany, for the list of successes during 1912 and 1913 is a very long one. Besides being responsible for a number of long distance cross-country flights it was used with success in the following cases among many others. In the Upper Rhine Circuit it was fitted to Hirth's winning Rumpler; in the Berlin-Vienna race it was fitted to the same pilot's winning machine; at the Kiel Aviation Week Caspar, on a Rumpler with a 95-h.p. N.A.G., beat the German height record, and Hirth, on a Rumpler with a 100-h.p. Argus, beat the height record with a passenger; at Leipzig, Hirth, on a Rumpler with a 95-h.p. Mercédès, and Krieger, on a Jeannin with a 100-h.p. Argus, were 1st and 2nd; in the Krupp Aviation Week, Baierlein, on an Ago with a 100-h.p. Argus, took the two first cross-country prizes; at Gotha, Lindpainter and von Görrisen, on Agos fitted with 100-h.p. Argus motors, took all the first and second prizes; in the flight round Berlin, Krüger, on a Harlan with a 100-h.p. Argus, and Baierlein, on an Ago with a 100-h.p. Argus, were first and second, and Hirth, on a Rumpler with a 95-h.p. Mercédès, was fourth. To finish up the year, on December 31st Faller, on an Aviatik, put up a world's record for duration with four passengers, and to begin 1913 the same pilot put up distance records on January 3rd and 5th with five and seven passengers, using a 100-h.p. Argus engine.

It is also worthy of note that in the Kaiser Preis for motors the majority of the engines, including the winning Benz, were fitted with Garuda propellers, which seems to show that the claim that the Garuda strains an engine less than an ordinary propeller is recognised by the leading German motor manufacturers.

The Garuda has been largely used on aeroplanes built by German firms for the Russian, Roumanian, Bulgarian and Turkish armies, and more recently they have been adopted by the Zeppelin and Schütte-Lanz companies for their airships. It will be remembered that this huge propeller for dirigibles was shown at Olympia, and that in spite of its size it was as beautifully made as the small ones. One gathers also that the Parseval, which has just been delivered to the Navy, is fitted with this propeller, and one may be sure that the Naval officers whose duty it was to pass the ship, would not have sanctioned the use of this propeller unless they had been thoroughly satisfied with it beforehand.

Incidentally, it may interest some of our scientific readers to know that the Garuda propeller has been submitted to exhaustive tests at the Aerodynamic Laboratory at Lindenberg, and has there been proved to be superior to any other make tested, though one is inclined to believe that the performance of the propeller on aeroplanes will carry more weight with aeroplane constructors.

The designer of the propeller has studied its production for many years, and has evolved his own formulæ, by which he calculates scientifically the design of propeller adapted for each particular aeroplane and motor, for it is obviously a mistake to assume that because a propeller is to be used, say, with a 50-h.p. Gnome, it will do equally well on any machine to which that engine may be fitted, and this is an error into which many aeroplane owners and a certain number of aeroplane constructors are rather apt to fall.

This propeller is, in future, to be made in this country, under the supervision of men who have had much previous experience in its manufacture, and its advent will be welcomed by all those who recognise the need for further investigation, efficient as many propellers are to-day. A new-comer with a good record is always a valuable contribution to a subject of which even the best people still have a good deal to learn.

Scores for the G.A.C.

The General Aviation Contractors announce that the recent passenger-carrying records made by MM. Champel and Marty were made with Anzani engines, and that the flight made by Daucourt on a Borel monoplane from Paris to Berlin in competition for the Pommery Cup was made with a "Rapid" propeller, and not with another make as noted at the time. M. Daucourt wired: "Succeeded Paris-Berlin, helped by your marvellous propeller in terrible wind." The G.A.C. are British agents for the Anzani and Rapid.

A Blériot for New Zealand.

The Blériot monoplane in which Mr. Gustav Hamel flew on his recent journey from Dover to Cologne will be named the "Britannia" by Lady Desborough at Hendon this afternoon, and will then be formally presented to the New Zealand Government by the Imperial Air Fleet Committee, which appears to be allied to the International Correspondence Schools, and to the "Standard," which enterprising paper organised Mr. Hamel's flight. Mr. Hamel will then make a flight in the machine, carrying a member of the committee.

The Week's Work.

MONDAY, May 12th.

Hendon.—At Depperdussin School, Lieut. Porte entered 100-h.p. in cross-country race. Mr. Brock, who started earlier, finished second—a splendid performance for the little 35-h.p. Dep. Mr. Brock also entered bomb-dropping and speed.

At W. H. Ewen School, Mr. Baumann test. Mr. M. Zubiaga circuits at 300 ft., good landings. Lieut. W. C. Hicks half circuits. Mr. C. George (new pupil) first rolling.

Full report of the racing appeared in last week's Aeroplane.

Brooklands.—At Vickers School, Mr. Knight testing new biplane (70-h.p. Gnome). Then on other school biplane with Mr. Beever.

Commander Samson, R.N., on Short biplane, arrived for motor meeting.

Stamford.—Mr. Hucks on 70-h.p. Blériot exhibitioning in 35-m.p.h. wind before large and enthusiastic crowd, much struck by accurate keeping of time table.

Leeds.—Mr. Harold Blackburn on 50-h.p. Blackburn flying exhibitions. Excellent performance and audience.

Southwold.—Mr. Spratt on Deperdussin passenger flying. In afternoon 15 mins' exhibition flight at 1,000 ft. Much appreciated. Later up to 3,300 ft. for 20 mins. Crowd rather troublesome.

Windermere.—Lakes Flying Co. Mr. Stanley Adams took "Water Hen" out with passenger.

TUESDAY, May 13th.

R.F.C., Central Flying School.—Moderate easterly wind. Fine, but cloudy. On H. Farman 44½ Major Gerrard with Lieut. Stopford 5 mins, with Sergt. Vagg 5 mins. On H. Farman 44⅓, Major Gerrard with A.M. Dinsmore 10 mins.

R.F.C., Farnborough.—On Bréguet 210, Lieut. Playfair 19 mins; Lieut. Chinnery 36 mins; Capt. Beor 4 mins; Sergt. Hunter 8 mins with Lieut. Soames, 10 mins with Sergt. Wright; Capt. Shepherd 6 mins, 19 mins. On Maurice Farman 307, Lieut. Gould 24 mins, 25 mins with Lieut. Horspily; Capt. Board 10 mins with Lieut. Burn.

Hendon.—At Graham-White School. Very windy. Mr. Manton circuits on 35-h.p. Blériot.

At Deperdussin School. Very windy. No school. Mr. Spratt took up three passengers to 1,600, 600, and 2,000 ft., respectively. Engine missing, so had to come down in ploughed field, buckling wheel. Repaired and flew back.

At W. H. Ewen School, M. Baumann test on 35-h.p. Caudron No. 2, Lieuts. G. Adams, Messrs. W. C. Hicks and Zubiaga, circuits, Mr. C. George rolling. In evening Mr. Lewis Turner testing new 45-h.p. British-built Anzani-Caudron, which flew splendidly

Brooklands.—At Vickers School, Mr. Knight testing biplane, Mr. Mitchell circuits at good height. Mr. Orr Paterson on biplane alone. Messrs. Waterfall and Knight on biplane both with passenger. Mr. Knight with Mr. Beever.

Commander Samson, R.N., left for Eastchurch.

Leeds.—Mr. Harold Blackburn across country to Wakefield.

WEDNESDAY, May 14th.

R.F.C., Farnborough.—On Bréguet 210, Lieut. Chinnery 21 mins; Major Raleigh 16 mins; Capt. Shepherd 30 mins, with Lieut. Soames to Frensham and back; Lieut. Playfair 4 mins; Sergt. Hunter 6 mins. On Maurice Farman 307, Capt. Board 55 mins with passenger to Borden and back; Lieut. Gould 1 hr 50 mins with Lieut. Thomson to Brooklands and back; Lieut. Waldron 25 mins with Lieut. Hay. On Maurice Farman 305, Lieut. Gould 20 mins with Sergt. Bateman; Capt. Musgrave 13 mins, and 40 mins to Guildford and back; Lieut. Smith-Barry 5 mins; Capt. Reynolds 8 mins; Lieut. Holt 57 mins.

Hendon.—At Graham-White School, Mr. Pougher on No. 7 doing straights under Mr. Noel Mr. Carr straights.

At W. H. Ewen School, M. Baumann test on 35-h.p. Caudron, Lieuts G. Adams and W C Hicks half circuits, Mr. H. Gist straights. Messrs. H. Jagenberg and N. Cowling rolling.

Brooklands.—At Vickers School, Mr. Knight testing biplane with Mr. Beever (pupil), promoted to front seat, good straights. Mr. Mitchell did first half of brevet test on biplane in splendid style. Mr. Knight testing No. 5 mono, Mr. Waterfall excellent circuits at 2,000 ft on mono for about forty-five mins.

Manchester.—Mr. Temple on Caudron flying at Trafford Park.



WITH THE BRISTOLS AT BROOKLANDS:—In the machine, at back, Lieut. Broder; in front, Lieut. McClellan. Standing, left to right, Mr. Merriam, Lieut. Duncan, Mr. Graham Harris, Lieut. Wall, Lieut. Morgan, Mr. Bendall.

Liverpool (Waterloo).—Mr. Melly on 35-h.p. Anzani-Blériot 10 mins; engine all right; only conclusion about Sunday contretemps was that sultry atmosphere and 20 lbs. extra fuel caused overheating.

THURSDAY, May 15th.

Windermere.—Lakes Flying Co. Mr. Trotter circuits on Mr. Grossplelius's hydro-mono. "Water Hen" three flights, damaged float on sunken stake in alighting.

Manchester.—Mr. Temple out in big wind on small Caudron.

FRIDAY, May 16th.

R.F.C., Farnborough.—On Bréguet 210, Lieut. Playfair 3 mins, 13 mins; Major Raleigh 7 mins; Lieut. Chinnery 4 mins.

R.F.C., Montrose.—Capt. Herbert on Maurice Farman, representing full strength of Squadron 2.

Brooklands.—At Vickers School, Mr. Knight on biplane with Mr. Beever. Then Mr. Beever in front seat for straights. Mr. Waterfall on biplane with passenger, landings. Mr. Knight took passenger in biplane Mr. Mitchell passed second half of brevet. Mr. Orr Paterson circuits. Capt. Wood testing new biplane (70-h.p. Gnome). Mr. Knight on same machine. After test by Mr. Knight, Mr. Waterfall circuits on No. 5 mono. Mr. Orr Paterson circuits on other school biplane. Mr. Mitchell on No. 3 mono with Mr. Knight straights.

Leeds.—Mr. Harold Blackburn out round Wakefield and back.

Liverpool (Waterloo).—Mr. Melly on two-seater, figures of 8 at 300 ft.

Windermere.—Lakes Flying Co. Mr. Stanley Adams on "Sea Bird" alone and with passenger. Mr. Bland on "Water Hen" with passenger.

Manchester.—Mr. Temple out by Eccles, Urmston, and Barton on Caudron.

SATURDAY, May 17th.

R.F.C., Central Flying School.—Slight North-East wind. Bright and clear. On Avro 430, Major Fulton 5 mins. On Avro 433, Major Fulton 8 mins testing both machines. Lieut. Cholmondeley from Lark Hill on Avro biplane, returning later. Third detachment of officers joined school this day for new course of flying.

R.F.C., Farnborough.—On Bréguet 210, Lieut. Chinnery 24 mins; Capt. Beor 5 mins; Capt. Shepherd 10 mins with A.M. Vaisey; Sergt. Hunter 30 mins with Lieut. Soames to Frimley, Bagshot, Sandhurst, and back, 6 mins with Lieut. Smith. On Maurice Farman 307, Lieut. Holt 10 mins, 20 mins with Sergt. Ward, 15 mins with A.M. Ledger; Capt. Board 35 mins; Lieut. Atkinson 15 mins, 35 mins with Lieut. Scot, 30 mins with A.M. James, 60 mins with Lieut. Gould.

Hendon.—At Grahame-White School, Mr. Tone Bayetto circuits on B 2 mono, Mr. Birchenough straights on No. 7 biplane with Mr. Noel.

At Depperdussin School, Colonel Smith had first lesson 10 mins rolling on taxi 2. Got on to rough ground and buckled wheel.

At Blériot School, M. R. Desoutter figures of 8 on No. 4. Capt. Cox and Messrs. Williams and de Villiers rolling on No. 1. Mr. Gower (new pupil) joined Mr. R. B. Slack circuits on No. 5.

At W. H. Ewen School, Mr. Turner exhibition work on 50-h.p. and 45-h.p. Caudrons.

Competition and exhibition flying specially reported.

Brighton-Shoreham.—Lieut. Ashton landed from Salisbury on Maurice Farman with Lieut. D. L. Allen as passenger. Mr. Eric Pashley circuits on Blondeau-Hewlett, Gnome running badly.

Brooklands.—At Martin Handasyde's, after alterations to 120 Austro-Daimler engine Martin Handasyde mono out for several circuits with Mr. Gordon Bell showing still further increase of speed.

Sopwith "bat-boat" out in early morning, showing marked improvement in stability.

Manchester.—Mr. Temple on Caudron over White City.

SUNDAY, May 18th.

Hendon.—At W. H. Ewen School, Mr. Sydney Pickles several exhibition flights on 60-h.p. Caudron in strong wind, rising rapidly to 3,500 ft., banking in old Caudron style, and always landing with beautiful spiral. Also beat Mr. Slack on Blériot in private match.

Messrs. Verrier, Noel and Grahame-White flying M. Farmans and taking many passengers.

Brooklands.—At Vickers School, Mr. Knight testing biplane. Messrs. Wight and Waterfall and Lieut. Blatherwick practising bomb-dropping and landings for competition. Mr. Beever, with Mr. Knight behind, straights for 10 mins.



Sergt. H. C. Wright, R.F.C., formerly a well-known experimenter with models. He took his certificate on a Short at the C.F.S.

Mr. Temple at Manchester.

Mr. George Lee Temple, last Wednesday, at the Trafford Park Aerodrome, made two flights during the afternoon in a gusty wind. Previously that morning he had taken his 35-h.p. Caudron for a trial cross-country trip, passing over the outskirts of Manchester at a height of 500 ft. On Thursday he was only able to make two ascents owing to the wind, which at one time was blowing well over 40 m.p.h.

The next day the weather conditions had improved, although the heat was a source of trouble. Shortly after noon Mr. Temple made a circular cross-country trip, attaining a height of 500 feet and flying over Barton and the Old Trafford district. He descended in a steep glide over the spectators' heads, and was given an ovation on alighting. Later, the wind having risen to 30 m.p.h., he again went out for a cross-country trip, passing over Eccles Church, Urmston, and Barton Moss, covering a distance of about thirteen miles.

On Saturday a wind of 40 m.p.h. was blowing, and so the start was delayed until the evening. Then rising to a height of 2,200 ft., the pilot flew over the White City, the docks, and passed over the county cricket ground, where a match was in progress. The crowd of 6,000 were very enthusiastic.

A Striking Debut.

Having gone through its trial flight at Brooklands, on the Friday before Whitsun, the Sopwith tractor biplane (80-h.p. Gnome) was flown over to Farnborough in the morning and there went through the War Office tests for climbing and rolling, both of which she accomplished in a highly satisfactory manner, the pilot (Mr. H. G. Hawker) landing and getting off the rolling test ground and rolling all over it. The climbing test showed 1,000 ft. in 2 mins. 22 secs., with one passenger and four hours' fuel on board.

On Saturday morning, in a very gusty wind, she went through her speed-variation test, her slow speed being 40.6 m.p.h. and her fast speed 73.6 m.p.h., though it was evident that in a calm and lightly loaded she would vary from 35 to 75 m.p.h., and her actual landing speed is abnormally low, something well under 20 m.p.h.

Having accomplished this, she was flown back with a passenger to Brooklands, and then on to Hendon, where she was entered for the altitude contest, and won it with an altitude of 7,400 ft., this height being reached in 15 mins. In the evening she was flown back to Brooklands.

On the Sunday she spent the day passenger-carrying, and on Whit Monday she was again flying at Brooklands, where she won the cross-country race. Not many machines have distinguished themselves so highly in such a short time, and much credit is due to Mr. Hawker for this fine handling of the machine in these many and searching tests. One wonders whether any official reference will be made by Colonel Seely to the merits of a machine which is not an official production, or whether he still believes that the Royal Aircraft Factory still have a monopoly of the finest brains in the world.

The Avro Expansion.

The new works of Messrs. A. V. Roe and Co., Ltd., at Clifton Street, Miles Platting, Manchester, are a great improvement on their previous premises. At present they are employing a staff of about one hundred workmen, but there is room for considerably more. The new works are well built and thoroughly equipped with machinery, hot-water heating and a steam power plant, also the latest time-checking system has been installed, so that not only do the hands work under the best possible circumstances, but things are arranged so that, in return, the work is done efficiently.

The works comprise nicely fitted offices, a good roomy drawing-office, and the following departments: Wood-working machine-shop, carpenters' shop, engine-room, boiler-house, hot room for the gluing of propellers, varnishing shop, french polishing shop, enamelling shop, upholstering department, and plane-covering department.

For the last couple of months the drawing-office has been chiefly engaged on designs for the new Avro two-seater which it is expected will be the last word in tractor biplanes. In this machine special attention has been paid to five points: (1) Maximum strength with minimum weight; (2) efficiency for power; (3) ease of manufacture; (4) quickness of erecting; (5) facility for repairs.

One hopes that the enterprise shown by Messrs. A. V. Roe and Co., Ltd., will before long necessitate their multiplying many times the number of workmen employed and another removal to still larger works.

C.A.V. Lighting.

The sterling qualities of the C.A.V. Car Lighting System, manufactured by C. A. Vandervell and Co., Warple Way, Acton, London, have long been recognised by all who have had experience of the different lighting sets now on the market. It is, therefore, not surprising that the C.A.V. pioneer lighting system and equipment have been adjudged first on all counts in the trials for lighting sets at the Turin Motor Exhibition. This competition is the first of its kind that has ever been held by an independent technical body. Practically all the leading makes were entered and the tests were thorough; the result, therefore, furnished conclusive proof that the claims made for the C.A.V. system are solidly based.

Those interested in lighting should note that C.A.V. lighting sets have been used with notable success in the night flying at Hendon, and are fitted to a number of foreign airships, and that Vandervell fittings are used on the British airboats also.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. MONDAY, to ensure insertion.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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READING ROOM

Remarkable Success of the New Policy at Hendon.

The new policy at Hendon recently outlined in THE AEROPLANE is creating an extraordinary amount of interest. The idea is to include in the programme issued each week-end interesting articles on machines and pilots, in order to enable those visitors who may not be closely acquainted with flying matters to learn more about the subject.

Since the first announcement of the new policy there have appeared illustrated articles on the Henry and Maurice Farman Biplanes, the Caudron Tractor Biplane, and the Blériot Monoplane.

The functions of the various parts of these machines have been clearly indicated, the special characteristics of each type described, and the way each one is flown and controlled in the air, have been explained in a way that the non-technical reader can easily understand.

The sketches of the careers of popular Hendon pilots, by Mr. C. G. Grey, have proved very popular. Up to the present the aviators dealt with have been Gustav Hamel, Pierre Verrier, W. H. Ewen, and Marcel Desoutter. This series is being continued week by week. In the programme for the Empire Day Meeting, Mr. Lewis Turner's career will be given. The programme for the great Whitsun Meeting contained an article on "The Evolution of the Biplane," by Mr. J. H. Lodeboer, Editor of "Aeronautics," which attracted a great deal of attention.

Next Saturday (Empire Day) the programme will contain a simple description of the working of the famous Gnome engine. Other articles arranged for future issues will explain why aeroplanes fly, how to judge flying weather, and how to easily distinguish different types of machines.

Already it has become necessary to open a subscription list for those who desire to have the programme regularly during the season, and in order to encourage the scheme, arrangements have now been made to forward advance copies of each week's issue for the next twenty-four meetings by Thursday evening's mail for 4s. post free.

There are still a few copies left over of the special reprints of the programmes containing particulars of the Henry and Maurice Farman Biplanes, and the careers of Gustav Hamel and Pierre Verrier. If any reader of THE AEROPLANE would like copies to hand to friends who are not sufficiently enthusiastic on the subject to buy an aviation paper, they will be gladly sent to any address from the London Aerodrome Offices, 166, Piccadilly, W., on receipt of 2d. to cover postage.

In the case of the majority of visitors to Hendon these articles are filling a distinct need. Even if the flying has aroused interest to the point of purchasing an aviation paper, the new reader has experienced some difficulty in understanding all that is written. The Hendon programme provides an excellent means of acquiring A B C knowledge of aviation. It is the novice's guide. And it is also proving vastly interesting to those who are already familiar with the subject, particularly the articles on the pilots. These are quite up to date, and contain information that has never before appeared in print.

In addition to new ideas in the programme there are other developments at Hendon which will appeal to all visitors. The catering arrangements are now excellent. There are permanent cafés and tea-rooms in each enclosure, where Lunch or Tea can be enjoyed in comfort whilst watching the flying. The announcement of starters in the races, and the results of the various competitions are being accelerated. It has also been arranged for a bell to be rung in each enclosure to signal the start of a race and the commencement of the last lap.

The comfort and convenience of visitors is being studied in every way, and there is every prospect that the present season at Hendon will not only be the most successful from the point of view of numbers, but that it will also show a considerable increase in public interest for the science and art of aviation.

Delivered W. M. URQUHART & SON, from 11 Queensferry Street.

EMPIRE DAY MEETING

SATURDAY, MAY 24th, 1913.

THIS will undoubtedly be one of the most attractive meetings ever held at Hendon. Prominent people who have associated themselves with the aviation movement, as well as representatives of the Colonies, have promised to be present.

The Programme of Racing includes a Grand Speed Handicap for "The Imperial Cup," and an Altitude Contest. Racing starts at 2 p.m., weather permitting.

Every week the science and art of aviation can show distinct development, and nowhere is this so apparent as at the London Aerodome. This Empire Day Meeting should, therefore, have a favourable influence upon the public realisation of the importance of aviation to the British Empire.

SECOND AERIAL DERBY,

June 7th, 1913.

It is confidently expected that this classic aerial event will create even greater interest than last year. The race will start and finish at Hendon. There will be contests both before and after the big event, as well as special exhibition flights by famous flyers. Full particulars will be announced later.

We shall be pleased to send a complete list of the splendid series of Meetings arranged for the present season. Drop a post-card to the London Aerodrome Offices, 166, Piccadilly, W.

To Regular Visitors.

IF you are in the habit of frequently visiting Hendon it will be very advantageous to purchase a Season Ticket. For gentlemen the price is £2 2s. These tickets admit to the Paddock (2/6) Enclosure on all days when the Aerodrome is open to the public. Tickets for ladies are £1 11s. 6d.; children under 13, £1 1s. For a motor-car or carriage only (which will include driver if in livery) £2 2s. These tickets can be obtained at the London Aerodrome Offices, Hendon, or 166, Piccadilly, W.

DID YOU MISS THIS?

An important announcement appeared on the back page of last week's "Aeroplane," dealing with the book "Flying at Hendon," which is quickly going out of print.

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THE EDINBURGH AERONAUTICAL SOCIETY

THE AEROPLANE

Edited by C. G. GREY. ("Aero Amateur")

1d. WEEKLY

THE EDINBURGH
AERONAUTICAL SOCIETY
READING ROOM.

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, MAY 29, 1913. No. 22.

A NEWCOMER TO HENDON.



The latest Martin-Handasyde monoplane (120-h.p. Austro-Daimler) was a welcome newcomer at Hendon last week-end. She is here shown making her first exhibition flight after her arrival from Brooklands. Mr. Gordon Bell, who piloted the machine so brilliantly, is shown on the right.

The special design of the

Handley Page Planes

gives to the monoplane that inherent stability which makes the machine so easy to learn upon, so simple to fly.

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Telegrams: Hydrophid, S.-West London.

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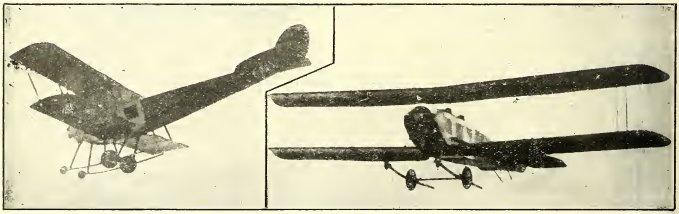
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AERONAUTICAL SOCIETY READING ROOM.

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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aerofoil, London.

The Development of the Naval Air Service.

With the commissioning of H.M.S. "Hermes" by Captain Vivian, the Naval Air Service enters upon a new phase of its existeuce. The whole personnel of the Naval Flying School at Eastchurch turns over from H.M.S. "Actæon" to the "Hermes," and becomes absolutely independent of any other branch of the service, and deals direct with the Admiralty through the Captain of the "Hermes." The aviation branch is no longer classed as anything that comes handy, as when at the beginning of things officers appointed for aviation were appointed to a torpedo depot ship. The aeroplane now assumes its proper position as a definite arm on an equality with the Submarine Service.

The Lighter-than-Air Branch.

Apparently, the lighter-than-air branch of the Air Service still remains in an embryo condition for the time being, as officers and men appointed for dirigible work are borne on the books of the "President" and not of the "Hermes." However, one may rest assured that this branch also will be developed as quickly as possible. The "Parseval" dirigible, despite delays in Germany which look uncommonly as if they were purposeful, has passed her speed and lifting tests in excellent style, and should be available for the training of personnel in a matter of days from now. The "Astra-Torres," which was brought over untested from France, was inflated last week, and may have passed her tests by the time this appears. So that the naval airship pilots have something to go on with while the big rigid ships are being built.

It is, of course, an open secret that at least two of our big ship-building firms have orders to build rigid ships of the largest size, their acceptance being subject to their passing specific tests, a businesslike method of procedure which is eminently sensible, and what one would expect from the Air Department at the Admiralty, but we cannot expect to have any of the big ships in flying order for a year, and we shall be lucky if we get them by then, for they are purely experimental, so that the development of the aviation branch is of more immediate interest, as having the greater possibilities for expansion in a shorter time.

The Task of the "Hermes."

The "Hermes," as mother ship for aeroplanes of all sorts, will have a peculiarly varied job, and one envies the officers and men who have been appointed to her, for even if they are not themselves fliers they will have the honour, and the pleasure, of taking part in a series of the most important and interesting experiments which have yet been carried out in the King's service. Particularly fortunate are the engineer officers, for on them will fall the responsibility of designing or testing devices which are in their way as important as the launching gear of torpedos, or the controlling gear of submarines.

It is recognised that the ordinary land-going aeroplane is only employed temporarily by the Naval Air Service for training purposes, and for certain experiments such as those in bomb-dropping, wireless, the use of guns on aeroplanes, and so forth, which can be done just as well over land as over water pending the delivery of a sufficient number of waterplanes to make it possible to do the same work at sea on a bigger scale. Also a certain number of land machines may be needed at the various coast-defence bases as a stand-by, for until a more serviceable type of waterplane is evolved it is quite possible that in time of war and bad weather combined it might happen that all available waterplanes would be smashed up through trying to get off or alight on broken water, and so coastal scouting for many miles out to sea might be done with land-going machines.

Lines of Development.

The real line of development for naval aeroplanes is, however, in two quite different directions; one is the production of sea-going waterplanes big enough to cruise on their own bottoms with a fleet at sea, at any rate, to as great an extent as a modern submarine can, the other is the design of very small aeroplanes to be carried on board any warship.

There are those in the Navy who pin their faith to aeroplanes of large size which will be carried by a specially-built high-speed mother ship, flush-decked and motor-driven. These machines are to start from and alight on the deck of this ship, and such a ship is to form part of every squadron at sea. It is highly probable that such an arrangement may be evolved, and may be of high utility, but the flying cruiser and the tiny scouting aeroplane will almost certainly coexist with it, for there is as much reason why one warship cruising alone should need the services of an air scout as that a fleet or a land base should do so.

Naturally, these little launched scouts would not be used in a fleet action, and if any of them happened to be out on duty when the fleet went into action they would have small chance of rejoining their ships when under fire. Under such circumstances the special aeroplane mother ship would stand off from the fleet, keeping out of range and in touch with the admiral by wireless, her aeroplanes meanwhile keeping watch for the enemy's reinforcements or for hostile airships.

The testing of aeroplanes for these varied purposes in their different stages of development will fall to the lot of the "Hermes," whose personnel will also test launching gears, aeroplane catching devices for use when the machines try to land on deck, and so forth. Probably the aspect of the "Hermes" when rigged up with experimental launchiug gears or landing platforms will be grotesque enough to break the heart of any officer who loves a smart looking ship—possibly she will look even quainter than did the "Hibernia" with the famous "scenic railway" on her forward superstructure, but the needs of the service know not artistic aspects, and if perchance the "Hermes" should come into harbour looking like a cross between the Earl's Court Exhibition and a Christmas-tree, with gadgets hung all over her, one may rest assured that the ridicule of the rest of the service will be largely prompted by jealousy of the fact that the "Hermes" is having all the real fun to herself.

The Extinction of the "Naval Wing."

Incidentally, it rather looks as if the Naval Wing of

the Royal Flying Corps, "one and indivisible," was quietly ceasing to exist. Of course, the beautiful scheme for a corps of "ultra-marines" was—in the words of the theologians—ordained to be damned, but one scarcely expected the Naval Air Service to develop so quickly. One imagines that the dynamic force of the kight Honourable Winston Spencer-Churchill is somewhat responsible. The young man in a hurry may be a danger to himself and everyone else, but if he is efficient, as in this case, he gets things done.

Writing purely as an onlooker, without any technical knowledge of the service, and merely following events to their logical conclusion, it seems as if the official headquarters of the Naval Wing, R.F.C., at Eastchurch, will become simply a huge training establishment for naval aeroplane pilots. These pilots must perforce, owing to scarcity of officers in the Navy, be largely civilians, so that Eastchurch may develop into a kind of cross between an Osborne for grown-ups and a purely naval version of the Central Flying School. I can hardly imagine that there will ever be a second Naval commandant at the C.F.S., in spite of the splendid work done there by the present able commanding officer. When his term expires a soldier will succeed him, and at the end of that term probably everyone will have seen the foolishness of training naval aviators in the middle of Salisbury Plain, ideal though it be for soldiers.

The Future of Eastchurch.

Eastchurch itself must develop enormously, and the sooner its further expansion is commenced the better, unless it is to be shifted bodily to some spot right alongside the sea, which might be better for the training of waterplane pilots. At present the quarters, though comfortable, are inadequate in capacity, both for officers and men, and will become more so. Also as far as I could judge there are not enough machines there. At least, that was rather how it appeared to me during a short visit last week. It was really quite fair flying weather, with a steady if rather strong wind, but a number of athletic looking young officers whom I have not the honour of knowing personally, but who appeared to be physically quite up to the highest service standard, appeared to be doing a great deal of walking but no flying, so I assumed, without being inquisitive, that there was a shortage of machines. I know that various aeroplane makers here and abroad have a large number of machines on order for the Navy, and that a very fair number have been delivered so I take it that facilities for rapid repair of school and practice machines are also lacking.

Possibly some of the buildings now in process of construction may be intended for elaborate repair shops—that I did not presume to ask—but if so, their construction should be accelerated to the utmost, for if the Navy is to save us from being outpaced by other Powers—I one has quite given up any hope of the Army doing anything adequate under the Seely *régime*—it will have to hustle at a rate of knots, and the junior officers must be given every possible chance to fly whenever the spirit moves them, in good weather or bad.

The Helpful Civilian.

It might be subversive of all Service ideas, but as a mere civilian it seems to me that if a big repair shop is established at Eastchurch it would be well for the staff to include a really skilled aeroplane tuner specially engaged from each of the firms whose machines are used at the school, so that if any machine went wrong there would be a man on the spot who knew it intimately to put it right. These men might, I imagine, be engaged by the Navy purely as civilian mechanics, just as mechanics are engaged in dockyards, and if they were of sufficiently high class they could act as instructors to the naval mechanics. In this way each machine would be sure of fair play, which it cannot have when left entirely to mechanics who are strangers to all its little personal peculiarities.

Splendid work has been done by the Navy at Eastchurch in the past, and will be done in the future, but it is a long way from Whitehall, and must not be neglected if it is to keep pace with the development of the rest of the Naval Air Service as represented by the new waterplane bases and the "Hermes." Its increasing needs in machines and personnel deserve consideration. It is unnecessary to go into detail as to what all its needs are. Those who know know, and those who don't know ought to know.

Our National Safeguard.

However, taking it all round, the Naval Air Service is in a very promising condition. If only their Lordships of the Admiralty will continue to provide adequate men and money to support the Air Department, in despite of trouble with the Treasury, we may still sleep fairly happily in security from foreign aerial visitors.—C. G. G.

The Royal Aero Club.

At the committee meeting on May 20th the following aviators' certificates were granted :—469, April 30th, 1913, Lieut. Francis John Leslie Cogan, R.F.A. (Bristol biplane, Bristol School, Brooklands); 470, April 30th, 1913, 2nd Lieut. Roger Marshall, R.F.A. (Reserve) (Bristol biplane, Bristol School, Salisbury Plain); 471, April 30th, 1913, 2nd Lieut. Montagu Reaney Chidson, R.G.A. (Bristol biplane, Bristol School, Salisbury Plain); 472, April 30th, 1913, 2nd Lieut. Cyril Gordon Hacking, R.F.A. (Bristol biplane, Bristol School, Brooklands); 473, April 30th, 1913, Harry Stewart (Caudron biplane, Ewen School, Hendon); 474, May 2nd, 1913, Thomas Alfred Rainey (Bristol biplane, Eastbourne Aviation School, Eastbourne); 475, May 2nd, 1913, Sergt. John Mead (Maurice Farman biplane, Royal Flying Corps, Montrose); 476, May 2nd, 1913, Laurance Hugh Strain (Bristol biplane, Bristol School, Brooklands); 477, May 5th, 1913, Frank George Andreas (Vickers biplane, Vickers School, Brooklands); 478, May 6th, 1913, Major Neville John Gordon Cameron (Cameron Highlanders) (Vickers biplane, Vickers School, Brooklands); 479, May 9th, 1913, Lieut. Ulick John Deane Bourke (52nd Light Infantry) (Deperdussin monoplane, Deperdussin School, Hendon); 480, May 10th, 1913, John George Barron (Deperdussin monoplane, Deperdussin School, Hendon); 481, May 13th, 1913, Lieut. Francis George Brodribb, R.N. (Bristol biplane, Bristol School, Salisbury Plain); 482, May 16th, 1913, Robert Arthur King (Farman biplane, Freshfield); 483, May 17th, 1913, Lieut. William Gore Sutherland Mitchell (1st Highland Light Infanty) (Vickers biplane, Vickers School, Brooklands); 484, May 17th, 1913, Major George Charleton Merrick, R.G.A. (Bristol biplane, Bristol School, Brooklands).

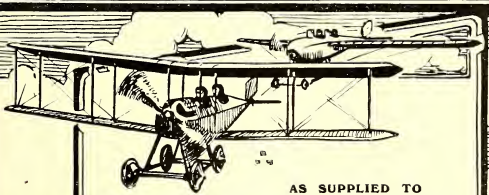
A New Committee Man.

Mr. T. O. M. Sopwith has been elected to the committee of the Royal Aero Club to fill the vacancy created by the death of Sir Charles D. Rose, Bart. An excellent selection, for Mr. Sopwith is one of the keenest and most enthusiastic supporters of aviation in this country.

British Height Record with Two Passengers.

The report of the flight made by Major E. L. Gerrard, R.M.L.I., accompanied by two passengers, on May 2nd, 1913, together with barograph charts, have been considered by the R.Ae.C. Committee, and it has been decided to accept the height accomplished—viz., 8,400 ft.—as a British height record for aviator and two passengers. The aircraft used on this occasion was a "B.E." Army machine fitted with 140-h.p. Gnome engine.

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Disorganisation in France.

BY W. E. de B. WHITTAKER.

In two recent issues of this paper there appeared two extremely dull but possibly necessary articles on the elaboration of organisation in the flying section of the French Army. Few things on this earth have attained perfection, and those have rotted to extinction before a grudging world has granted its meed of praise. It is only the blatant who achieve fame in their own era. This is a paradox, perhaps; but paradoxes, it appears, are based on fact, horrible though it may seem. There are those to whom, tired of things English, distance lends perfection to the thought, and who therefore regard France as the birthplace of true genius and all beautiful things. And so, while one lives in England, it may well be; but a residence in France often causes a reversal of opinion. To return to the point at issue, the French flying corps may appear perfection to those who know Colonel Seely's hobby, but in the concrete it is not so. It may be the best in the world, but the existing best is not necessarily perfect. Because one is dying of a strange illness, not quite so fearful as that of which all others are dying, one is not therefore of the elect.

While the General Staff of France has prepared a scheme of organisation which is amazing in its clever complication, and which, if adhered to strictly, might bring the flying corps to that state of automatic precision so greatly desired by the modern soldier, a Parliamentary Commission has inquired into the existing conditions which prevail in the French Army. If an apparently unbiased report of their findings is to be trusted—and there is no reason why it should not be so treated—then there is much to be criticised in the methods and the general efficiency of the fifth arm. As, at the moment, France is in deadly earnest in its preparations for "the day," there is no question that reform will follow chaos with considerable speed. Without exception, the complaints are in regard to personnel, and do not regard matériel at all. It is possible that there are many points of criticism that might be brought up against the machines and ground management, but that does not arise in the present instance.

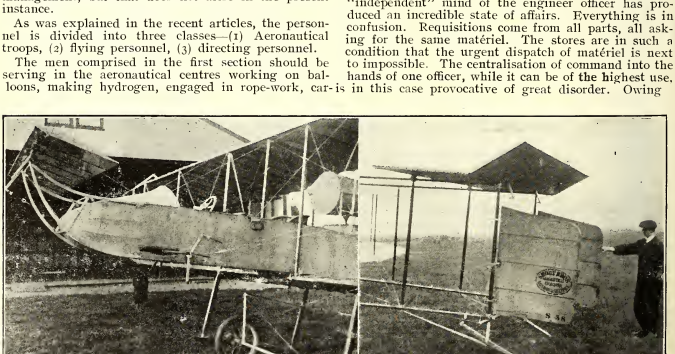
As was explained in the recent articles, the personnel is divided into three classes—(1) Aeronautical troops, (2) flying personnel, (3) directing personnel.

The men comprised in the first section should be serving in the aeronautical centres working on balloons, making hydrogen, engaged in rope-work, carpentry, upkeep and management of automobiles, and photography. Actually, the directing personnel use them in a very different way.

In the First Aeronautical Group they are divided into four companies (two of aerostation, one of aviation, and one of conductors) and three sections, and are chiefly young soldiers. The older, more experienced men, are mostly in the centres. Seventeen are at Saint Cyr. Until the beginning of January, the young soldiers were grouped in companies. At that time some were sent to the centres (fourteen to Saint Cyr on January 22nd and 29th), but at the end of the month there still remained at Satory 456 men of the aeronautical troops undergoing a system of training elaborated by the second in command of the First Group. That is, they spend their time acquiring an intimate knowledge of all that appertains to infantry drill. Most of their time they are on the square. They carry out extended route marches and field days and are learning the rudiments of those principles by which infantry take a fortified position. The authority from whom I take this information says this sort of training may rejoice the heart of an engineer officer, but it is hardly fitting as a basis on which to produce a number of fine mechanics.

All this time while these men are becoming excellent infantry of the line, the aviation centres are starved of men. The aeroplanes are dropping to pieces, the hangars rot, the matériel is disorganised and out of hand, the roads are impossible and no proper guard can be maintained on the aerodromes. For instance, at Saint Cyr on January 22nd last there were nineteen mechanics to look after the hangars, maintain fifteen aeroplanes, carry on the workshops, instruct a certain number of novices and mount an aerodrome guard.

This state of affairs is not attributed to the Ministry of War, but to the carelessness and negligence of the engineer officers in whose hands lie the direction of things aeronautical. The central administration is equally bad. As our French critic puts it, the peculiar "independent" mind of the engineer officer has produced an incredible state of affairs. Everything is in confusion. Requisitions come from all parts, all asking for the same matériel. The stores are in such a condition that the urgent dispatch of matériel is next to impossible. The centralisation of command into the hands of one officer, while it can be of the highest use, is in this case provocative of great disorder. Owing



The Short biplane, type S.38 (80-h.p. Gnome), showing the body and elevator and the tail arrangement.



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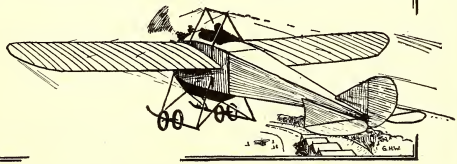
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to errors and deliberate changes in transmission the orders delivered are frequently impossible of execution and contradictory in form.

Red tape is rampant. If a soldier at Saint Cyr desires forty-eight hours' leave he must apply several days before. It is then given at Saint Cyr, signed at Versailles and delivered at Satory, after which he must submit to a medical examination at the barracks of the 1st Engineers.

No fault is found with the flying personnel. The officers and men of this section are beyond reproach in the execution of their duties. Death after death occurs in their ranks owing to the gross mismanagement and neglect by the directing staff.

The directing staff, the commission is reported to say, is chiefly notable for the predominance of engineer officers in its numbers, by its rare participation in aerial journeys, and by its assiduity in accepting the special rates of pay appertaining to aeronautical services. Some of these officers have not even been in a captive balloon.

At the head there is the inspector-general with a second-in-command. Then come the officers commanding groups, centres and depots, the personnel at Chalais Meudon, commands of units, and dirigible pilots. The greater number of these latter should not be counted in the effective flying personnel. Over thirty engineer officers have dirigible pilots' certificates and yet only three military dirigibles are actually mobilisable. The principle use of these is to fly on occasion a few hundred feet above Paris that certain officers shall be qualified for special pay. The reason why so many sappers take to dirigible work is that they may qualify with only three ascents. So soon as they are pilots the ten francs a day extra pay is theirs.

On paper it is understood that France has twenty escadrilles ready to mobilise. Actually five are in a fit condition to-day and four more will be shortly. The other eleven, owing to the lack of machines and men, may be expected in the distant future.

The Commission recommends as a remedy that (1) aerostation and aviation shall be separated; (2) the aviation services shall be removed from the grip of the engineers; (3) certain officers shall be replaced; (4) escadrilles shall be formed in times of peace up to full strength in personnel and matériel and with a definite strategic position; (5) the aviation companies shall be suppressed and the personnel transferred to the mobilisation units, that is, the escadrilles.

[Still, bad as all this is, the effective strength of the French flying corps is many times as great as that of the R.F.C., which has not to-day one single squadron at full strength and only three exist even on paper.—Ed.

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty appointments, May 20th:—

Engineer-Lieutenant—Edgar W. Riley to the "Hermes," vice Bishop, to date May 19th.

Royal Marines.—Captain A. C. Barnby, R.M.L.I., to the "Hermes," for flying course, to date June 1st.

From the "London Gazette," May 20th. War Office, Regular Forces:—

Royal Flying Corps, Military Wing.—The following are appointed to the Reserve:—Capt. W. G. H. Salmond, R.A.; Lieut. E. F. Unwin, A.S.C.; Lieut. C. H. Marks, Reserve of Officers (April 17th).

From the "London Gazette," May 23rd. War Office, Regular Forces:—

Royal Flying Corps, Military Wing.—Sec. Lieut. R. O. Abercromby, S.R., to be a flying officer (May 12th).

Torpedo-boat No. 23, Lieutenant and Commander F. A. Warner, of the Nore Defence Flotilla, is to be detached for service with the Royal Flying Corps, Naval Wing, so far as waterplane flights are concerned. She is to serve under the orders of the commanding officer of the "Hermes" light cruiser, Captain G. W. Vivian. The latter ship is still in Chatham Dockyard. The following particulars as to Torpedo-boat 23 may be of interest: Launched, 1097; displacement, 260 tons; Designed i.h.p. (T), 4,000; speed, 27 knots; armament, two 12-pr. Q. and three torpedo tubes; oil capacity, 25 tons.

Staff-Surgeon H. V. Wells, R.N., who has been in medical charge at Eastchurch since February 20th, 1912, passed the necessary tests for a pilot-aviator's certificate on May 24th.

One of the finest and most remarkable flights standing to the credit of the Royal Flying Corps was made last week by Capt. Longcroft (Welsh Regiment), attached to No. 2 Squadron, R.F.C., stationed at Montrose. Starting from Farnborough on Wednesday morning, May 21st, at 5.25, he flew to East Grimsby, where the first stop was made for petrol and to ascertain bearings. The descent was made at 7.20, and he started off again at 9.30, flying north to Ellington, near Morpeth, where a second descent was made for petrol at 11.30. He stayed three hours before resuming his flight. Reascending for the last stage at 2.30, he made splendid progress until he came over St. Andrews, where he encountered a rain and hail storm. He had almost reached the aerodrome before he got to the end of it, and when he descended at 4.20 p.m. he showed traces of a terrific fight with the elements, for his face was cut and bleeding. It shows fine determination to have kept on flying. He flew the distance of 550 miles in 5 hrs. 45 mins., and was travelling sometimes at the rate of over 100 miles per hour. The altitude maintained throughout the whole flight was between 5,000 and 6,000 feet. The wind was mostly in his favour, and this accounts for the speed, but it needs high qualities of endurance to sustain one over such a distance in such weather. The squadron are very much elated at the achievement, for such a flight is a sample of what must be done under war conditions, and it is well that we should know that the R.F.C. can do it. The distance is easily a record for a day's flying in this country.

On Wednesday of last week, sundry officers of No. 2 Squadron, R.F.C. (Montrose), started to fly from Farnborough to Montrose with a supply of new machines. Captain Longcroft on a "B.E."—whether of R.A.F., Bristol, or Vickers build is not stated—reached Montrose in the day, a very fine performance. Lieutenant Waldron was forced to land at Northampton, and Major Burke reached Seaham Harbour, near Durham—another excellent flight.

On Wednesday, Captain Becke also arrived at Montrose from Berwick.

On Thursday last during a review of troops on Salisbury Plain by General Sir Horace Smith-Dorrien, G.O.C. Southern Command, ten aeroplanes, representing the available strength of No. 3 Squadron, R.F.C. (Lark Hill), with the addition of sundry machines from the Central Flying School, "flew past."

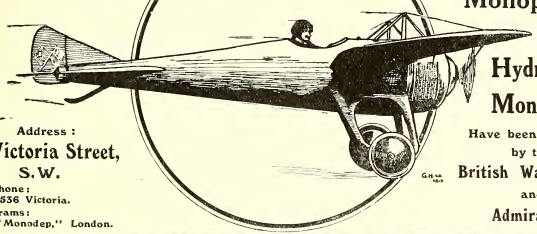
When the King and Queen were leaving the Thames for Flushing to be present at the wedding of Princess Viktoria Luise, the only daughter of the German Emperor, to Prince Ernst of Cumberland, Sub-Lieutenant Babington, R.N., on a Short hydro-biplane, and Lieutenant Seddon, R.N., O.C. Isle of Grain hydro-aeroplane base, on a Borel hydro-monoplane, accompanied the Royal yacht to a point beyond Margate, some eighteen miles from their base.

Lieutenant Ashton, R.F.C., returning from his week-end visit to Shoreham on a Maurice Farman on Tuesday was forced by the extreme cold to land near Portsmouth. Resuming his journey next day he had only covered ten miles when he was taken ill and obliged to come down. It is reported that he was in a state of collapse when assisted from the machine. Mr. Ashton is an excellent pilot, so presumably he caught a severe chill during his previous flight, and in spite of that pluckily tried to get the machine home before laying up. One wishes him an early recovery from his indisposition.

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On Thursday last Lieutenant C. W. Smith, R.F.C., flew from Farnborough to Dover, a good flight over country which is far from providing ideal landing ground. He returned later to Headquarters.

FRANCE.

On May 19th, at Reims, a Henry Farman biplane (80-h.p. Gnome) was put through its reception tests for the French army by M. Testulat. This aeroplane is intended for Lieutenant-aviator Prat, who will take it by air to Toul.

The Maubeuge escadrille, to which brief reference was made last week as having flown from Maubeuge to Dunquerque on May 13th, reached Calais later on the same day. Crotoy was reached on May 15th and Peronne on May 16th. Two days later it reached Reims, and Mezières on the Monday. The journey was completed on May 20th by its arrival at Maubeuge after a tour of 2,170 miles.

Sapper Irat, who has of recent days made many flights of singular excellence, has been chosen to fly the Henry Farman biplane (80-h.p. Gnome) presented to the army by the firm of Cusenier. It bears the name Commandant Cusenier.

Lieutenant de la Morlaye, who is one of the best-known of officer-pilots, completed the tests for his military brevet on May 20th, flying a Borel monoplane (80-h.p. Gnome) over a circuit in the neighbourhood of Chateaufort.

Lieutenant-aviator Brocard, who recently beat the two-passenger French height record, flew on his three-seated Deperdussin monoplane (100-h.p. Gnome engine) from Reims to Lyons in 3 hrs. 50 mins. actual flying time on May 20th. He had with him two passengers and stopped at Dijon on the way.

On May 21st, Captain-aviator Faure flew on a Blériot monoplane from Etampes to Mailly and back during the course of morning. The total distance there and back is nearly 200 miles. Captain Faure flew at an altitude of 5,000 feet in order to avoid the rain.

Escadrille 7, composed of Henry Farman biplanes (80-h.p. Gnomes) under Captain Voisin, left Chalons on May 22nd for Sissonne, where it is to be stationed.

At Saint Raphael, on May 20th, Levasseur, flying a Nieuport monoplane (100-h.p. Gnome) destined to the navy, rose to a height of 5,800 feet, thus creating a hydro-aeroplane altitude record. This flight was a portion of the reception tests.

M. Rugère flew the hydro-biplane Voisin II (100-h.p. Gnome) through the reception tests for the French navy, and the machine was then taken over by Lieutenant du Cayla. Voisin III is to arrive in the course of a few days.

Two Nieuport monoplanes are taking part in the naval manœuvres off Toulon, piloted by Lieutenant de l'Escaille and Ensign Delage. Despite the unfavourable weather and the heavy seas, these machines have both been constantly at work.

Lieutenant Menard has, it is stated, applied for permission to accompany the Payer expedition to Franz Joseph Land. He intends, if possible, to make an aerial exploration into the Arctic regions.—W.

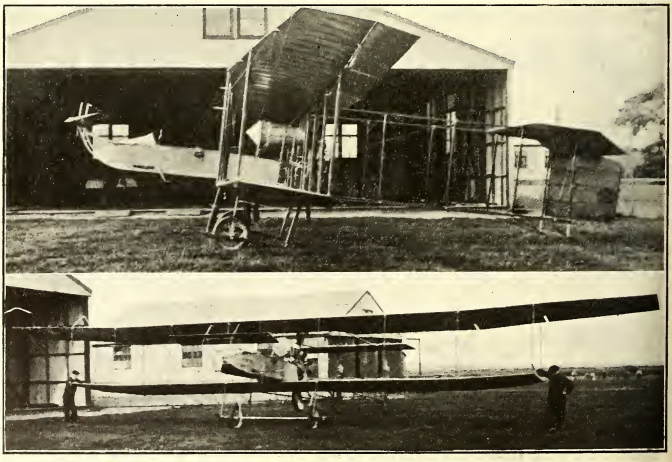
GERMANY.

On May 14th the Zeppelin dirigible Z.1 made its hundredth flight at Cologne, its station. After flying over the town and the surrounding country, it returned to its hangar.

H.R.H. the Prince Rupert of Bavaria made a detailed private inspection of the Johannisthal aerodrome. The officer-aviators were presented to him, and he expressed great interest in the military workshops.

The Budget Commission has voted the necessary money for the building of twenty dirigibles which are to be distributed in pairs to ten stations. The stations at present selected are as follows: Metz, Cologne, Dusseldorf, Wilhelmshaven, Hanover, Liebnitz, Posen, Koenigsberg, and Schniedemuhl. The tenth station is not yet announced.—W.

It is stated that a Bill concerning aerial regulations will be placed before the Diet before the year is out. Originally intended for discussion in April, recent incidents necessitated a revision, as no provision was made for the landing of foreign airships and aeroplanes on German territory. The Bill as it stands was placed before an expert committee last January, including Count Zeppelin, Major von Parseval, Dr. Eckener,



Two views of the Short biplane, type "S.38" (80-h.p. Gnome), similar to those on order for, and in use by, the Navy and Army.

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Helmuth Hirth, Field-Marshal General von der Goltz, and Councillor of Justice Niemaier. It was here that the question of foreign landings was raised, a matter that has been made acute by the late occurrences on French soil.

Captain Metzing, Imperial Navy, has been appointed commander of the marine airship detachment, and Captain Gygas commander of the marine aviation detachment, the first at Johannisthal and the second at Putzig.

The Diet very shortly will have to deal with the development of naval aeronautics. The Admiralty measures are embodied in a communiqué, which proves the extreme importance laid by headquarters on the furtherance of this service.

According to the details published, a sum of 50,000,000 marks (roughly £2,500,000) will be required until the year 1918, 32 millions to be expended on the purchase of airships and aeroplanes and erection of land stations, 12 millions on their upkeep, and 6 millions for the maintenance of the troops. Ten dirigibles are to be purchased, of which eight are to be constantly on service in two squadrons of four airships each, and two to act as reserve. These two squadrons will be housed in four reversible double hangars, whilst two sheds of the usual type will be built for the reserves. Cuxhaven will eventually be the base, and work is forging ahead steadily.

This harbour also acts as central station for aeroplanes, with six peripheral stations. The machines will be grouped into six detachments of six planes each, and fourteen flying machines kept in reserve. The hangars at each subordinate station will be big enough to shelter ten machines, and these are to be operated by the aviation detachments which come into being on June 1st, as do the airship detachments, decreed on the same date. These troops are stationed, so far as the airshippers are concerned, at Johannisthal, and the aviators at Putzig, until all preparations are completed. These detachments will be reinforced in due course as necessity demands until companies can be formed. By 1918, 1,452 deck officers, noncommissioned officers, and men are to be reckoned with, not including the officers themselves.—B

AUSTRIA-HUNGARY.

The first Hungarian military aviation station at Neusatz, near the Servian frontier, was opened amid festivities. Six aeroplanes were sent from the Viennese Air Squadron, carrying out demonstration flights and scattering flowers on to the spectators.—B.

RUSSIA.

On May 18th, at the military aerodrome near Saint Petersberg, two aeroplanes collided in the air. One of the pilots was fatally injured, but the other, a son of General Kovagrubko, Director of the Military Aviation School, was only slightly hurt.

Lieutenant-aviator Brodowitz is now in France studying French methods of organisation. On May 21st he visited the Deperdussin aerodrome at Reims and watched several flights. —W.

THE NETHERLANDS.

A military commission of Dutch officers, under the command of Captain Wallhardt-Sacre, with Lieutenant-aviator Verheyst, visited Issy les Moulineaux on May 20th and inspected the Clement-Bayard aeroplane depot. M. Guillaux made a flight before the commission.—W.

Foreign Notes.

France.

It is announced that a match had been arranged and will shortly take place between MM. Audemars and Garros. Three contests are to take place, one for speed, one for altitude, and one a "concours d'address," in other words a trick flying competition. One would judge that the betting would be heavily in favour of Garros.—G.

One of the most notable flights in France of the past week was that of Mr. Corbett-Wilson, who flew in one day from Buc to Lausanne, a distance of 270 miles. Flying a Blériot monoplane (80-h.p. Gnome) and with his mechanic as passenger, he left Buc at 6.20 a.m. and alighted near Dijon at 9.30 a.m. Starting again in the evening he passed Auxonne, Dole and Pontarlier, crossed the Jura and landed at Lausanne shortly after seven. Recently he has been making long flights in the neighbourhood of the Blériot aerodrome at Buc, often accompanied as passenger by Mr. Loftus Bryan, who has recently taken his pilot's certificate at Buc, and not at Pau, as stated by error last week.

The Prince de Nissole is now at the Farman school at Etampes with his two-seated Tellier monoplane (80-h.p. Gnome) preparing to take the military brevet. After that he has the intention of making a long cross-country flight from France to some other neighbouring land.—W.

Brazil.

M. Lucien Deneau has recently been making a series of exhibition flights near Manaos, a large city in the centre of Brazil, and on the banks of the Amazon. He has disturbed the sacred silences of the virgin forests with the insistent hum of his engine and there is no peace for the denizens thereof. Later he intends to pass down the Amazon and delight the inhabitants of Pernambuco, Bahia, and Rio de Janeiro.—W.

Germany.

Forty-one entries have been received for the Johannisthal week, including a large percentage of new men as well as that of Mlle. Galantschikoff, the Russian aviatress.

The Silesian Aero Club is to the front with propositions for a "Centenary Aviation Week," in celebration of the glorious year 1813. The German War Ministry has presented the sum of 10,000 marks towards the prizes. An interesting event will be the photographic contest included at the desire of the Imperial General Staff. Here the competitors have to take photographs from a height of 800 metres illustrating the tasks given them by the C.-in-C., VIth Army Corps.

An advertisement, truly up to date, culled from a Berlin daily: "Who will educate irreproachable lady of eighteen for aviation as profession." Such pleas are not uncommon in the journals of the German metropolis.—B.

The Prince Henry Circuit.

The Prince Henry Circuit wound up with a big banquet at Strassburg, at which H.R.H. Prince Henry presided and distributed the prizes. Contrary to expectations, Lieutenant von Hiddessen did not win the Emperor's cup, as he came to grief in the second scouting trial on the last day. He won, however, the prize in the reliability tour and ten thousand marks given by the National Aviation Fund as well as the Prussian War Ministry trophy.

In his speech, Prince Henry likened the aeroplane to the torpedo of the army and called the last two days of the event days of honour for German aviation.

The Emperor's cup went to Lieutenant Canter (75-h.p. Rumpler-Dove) for the best performance throughout, who also won the second prize for the reliability tour and the Prince Henry prize for the best performance in the purely military competition. The other important prizes went to Engineer Schlegel (100-h.p. Aviatik monoplane), Lieutenant Joly (95-h.p. Gotha-Dove), Lieutenant Carganico (100-h.p. L.V.G.), Lieutenant von Beaulieu (95-h.p. Albatros biplane), etc. All the officers who went through the various military trials on the last two days were remembered, as were their companions. The Zeppelin cruiser "Sachsen," with Dr. Eckener as pilot, also took part in the reconnaissances with the Chief of the General Staff, the C.O. of the XVth Army Corps, the Governor of Strassburg, Prince Waldemar of Prussia, and a number of military men on board.

The tasks set were most difficult and rendered more so by the bad weather on the final day, but of the twenty-two pilots who started from Karlsruhe on the scouting trip to Pforzheim, nineteen landed and reascended, and of this number seventeen arrived at Strassburg. Twelve left Strassburg for the second journey on the final day to Freiberg and Neubreisach, landings and reports to be made at both places, and nine returned to the start. The reconnoitring reports, messages and sketches had to be made en route and were collected at different landing stages, where fresh tasks were handed the competitors.

These military tests saved the reputation of the event, which on the third stage, from Coblenz to Karlsruhe, was one series of breakdowns, a fact that Prince Henry alluded to when he stated that the cause for these breakdowns was generally to be found in the lack of reliability shown by the motors. He went on to say that despite all endeavours the industry seem-

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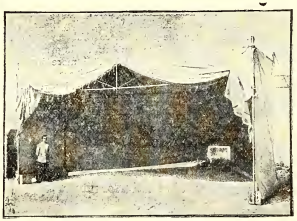
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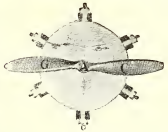
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ingly had not been able to accomplish as yet the construction of a motor as it should be. This verdict will presumably be of use in spurring constructors on to find a solution of the matter—one of the most urgent importance for aviation in peace and war.—B.

L'Affaire Brindejonc.

It is interesting to note that immediately they heard of M. Brindejonc's treatment by the Royal Aero Club several British aviators in France wrote to the club protesting against the action of the committee, and it will be still more interesting to see what reply the committee makes to these protests. A propos—does the committee propose to suspend Mr. Hamel's competitor's licence for flying over Hammersmith on his way to Ranelagh on Friday, or that of the pilot of a Caudron for flying over Brentford and Richmond on Saturday? Is one part of London to be more sacred than another? If so, why? Given a good pilot and a good machine it is as easy to land safely in Hyde Park or Regent's Park as it is to land at Ranelagh or on the Mid-Surrey Golf Links.

An Irish Pilot's Performance.

Mr. Denys Corbett Wilson, the Irish pilot who has twice flown the Irish Channel, left Buc, near Paris, on Thursday morning, the 22nd, and reached Lausanne in Switzerland at 7.30 p.m., flying over the Jura Mountains on the way. His mount was a tandem Blériot, 80-h.p. Gnome engine, and he carried a passenger. In France Mr. Wilson is esteemed as being quite in the front rank of Blériot pilots. He is another of the long list of excellent Irish pilots, a list which is quite disproportionately large in relation to the wealth and population of Ireland.

Astra-Nieuport Changes.

As was foreshadowed in this paper some weeks ago, big changes are being made by the Astra and Nieuport firms which both belong in effect to M. Deutsche de la Meurthe. The Astra people have now quite given up building aeroplanes, and this department has been turned over to the Nieuport works which are now situated at Issy-les-Moulineaux instead of Suresnes. The Nieuport Works, which are now under the technical direction of M. Train, who built his own machines at Mourmelon in 1910-11, and flew so well in the European Circuit, will continue to build monoplanes, but they will shortly produce a 200-h.p. biplane which is said to be something absolutely novel. Also, the French Dunne machines will be built by the Nieuport Co. instead of by the Astra Company as hitherto. The Astra people will build dirigibles and nothing else.

Aircraft and the Channel Tunnel.

Writing in the "Financial World," Mr. Douglas Thorburn, whose aviation notes are now quite a feature of that enterprising paper, says:—"The connection between aviation and the Channel Tunnel may not at first sight appear very close, but at a meeting reported elsewhere in this issue Baron Emile B. d'Erlanger made some interesting remarks on the subject. The problem of the military defence of this country has undergone a remarkable change since the advent of efficient aeroplanes and dirigibles, and while, as Baron d'Erlanger points out, we still retain command of the sea, it is painfully certain that we have not yet acquired command of the air, and our position is in that respect far from secure. The transport of troops across the sea would be attended by serious risk of aerial attack, and the Channel Tunnel would therefore offer a safe and rapid means of transport. It has been suggested to me that the tunnel itself would be equally exposed to danger from aircraft, but I imagine it would be a much more simple matter to make both ends fairly bomb-proof than to ensure the safety of ships. The subject is one of the greatest importance, and it is gratifying to know that so eminent and far-seeing a financier as Baron d'Erlanger is giving it his attention. The aviation industry in in urgent need of the assistance and encouragement of our leading financiers."

The point is a sound one. Moreover, as Baron d'Erlanger points out in his speech, the existence of a tunnel would ensure the import of food even if we lost command of the sea, so long as we retained our hold of the tunnel head and so long as France remained unconquered. It would be surprising that the daily Press has never taken up this question, which is of national importance, were it not that "nations have the newspapers they deserve."

Aeroplanes at Henley.

The Thames Conservancy have refused to grant the request made by the Phyllis Court Club to allow hydro-aeroplanes to perform on the Thames during Henley week. The decision is to be highly commended, and those who propose that waterplanes should be used on such restricted water when it is crowded to such an extent only show their ignorance of the capabilities and utility of such craft. Waterplanes at present can only be used on rivers, not on small streams. However, the country in the vicinity of Henley is mostly flat, and provides good landing ground, so it would not be a bad idea to organise a proper series of aeroplane exhibitions in the vicinity with the concurrence of the Regatta Committee, the flights being timed to take place between races, anything in the nature of trick flying over the river itself being strictly prohibited

Night Flying at Hendon.

To-day (Thursday) the first night-flying exhibition of the season will take place at Hendon. Gates will be opened at 3 p.m. and the machines will be illuminated at about 8.30 p.m. Fireworks will occur at 10 p.m.



Mr. Loftus-Bryan (South of Ireland Horse) in a Blériot monoplane at Hendon, May 25.

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A Flight on the Martinsyde Monoplane.

Since the Antoinette monoplane disappeared from the scheme of things that be there has been no aeroplane so beautiful, from the æsthetic point of view, as the monoplane designed and constructed by Messrs. Martin and Handasyde at Brooklands. There is a strong similarity in appearance and in some points of design between the two aeroplanes. As might be expected, certain attributes are common to both.

On Thursday last I was taken by Mr. Gordon Bell for a flight on the latest Martinsyde monoplane. This is the machine which was displayed at the Aero Show on Messrs. André's stand. It is now fitted with a 120-h.p. six-cylinder Austro-Daimler engine similar to that on the Cody biplane which won the Military Aeroplane Competition.

The day was perfect, with a bright sun and a light breeze. The air above Brooklands was steady and free from remous—at least, so it seemed. However pleasant this state of weather may be to the masses, it is not ideal if one wishes to form an adequate opinion of an aeroplane's airworthiness.

In a manner similar to that of the Antoinette, the Martinsyde ran along before rising with the fuselage horizontal and with the elevator in the normal flying position. So soon as the speed was sufficient the machine started to rise into the air. Mr. Bell then elevated, and in a moment we had jumped to sixty feet at a steep angle. Straightening out a little, Mr. Bell then allowed the machine to rise steadily, swiftly, and at the same time almost imperceptibly to a height of 300 feet.

We then circled the track several times in a staid and sober manner with the engine well throttled down. At each turn the Martinsyde banked naturally to a proper degree.

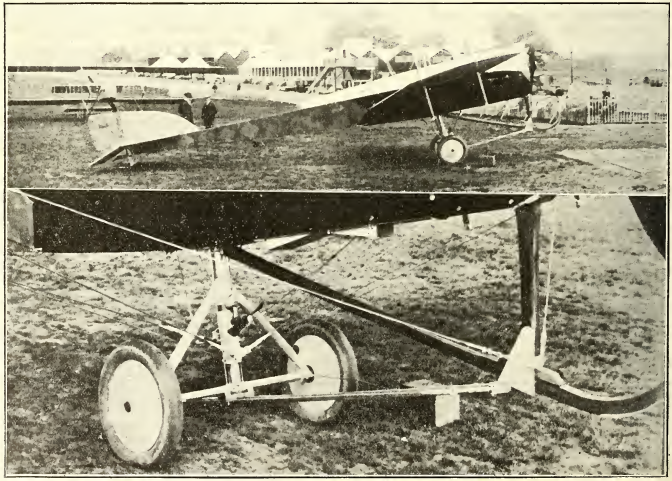
There is, as I have pointed out before, a great difficulty in separating the qualities of the pilot from those of the machine. So much of the apparent perfection of an aeroplane may be due to the skill and experience of the aviator and it is therefore of high importance to watch the pilot's movements closely while in the air. The less work he has to do in order to make the machine fly apparently well the better is that machine. Mr. Bell is a pilot of exceptional ability, partly as a result of extended experience of various types of aeroplanes. Yet it was not his skill alone that gave the flight its peculiar excellence. The aeroplane is itself of the highest rank, and is apparently easy to handle in the air.

I have made flights on a large number of aeroplanes during the last eighteen months with no other object than to watch the manner of their flying, but in none have I been quite so comfortable as on the Martinsyde. Though there is no deliberate attempt at a cowl turning upwards to throw the wind off—the deck being perfectly flat and unbroken from the top of the engine back to the passenger's seat, and about level with the passenger's shoulders—yet the draught is not strong. Even when I stood up the pressure was not high. There are many reasons—most of them highly favourable to the design—which account for this.

Tiring of staid flying, Mr. Bell opened the throttle fully, and descending to within a hundred feet of the ground, began to turn in fairly small circles at full speed, banking heavily at the turns. There is something of the magnificent in the banks of the Martinsyde monoplane. Only those who have seen the Antoinette fly in the hands of a master and then have watched the Martinsyde can appreciate how fully the latter aeroplane has carried on the tradition of beautiful flying. Yet their detailed design is in no way the same.

The Martinsyde answers its controls with great swiftness and precision. The slightest movement of the warping wheel or rudder bar was immediately responded to.

The landing speed is very low, but in the absence of wind pressure I was unable to judge the speed.—W. E. de B. W.



The new type Martinsyde monoplane (120-h.p. Austro-Daimler engine.) The streamlined deck should be noticed. Below is shown the chassis arrangement.

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The Growth of Eastchurch.

Those of us who knew Eastchurch in its early days, when the establishment consisted of the Short Brothers one-shed workshop, and the sheds belonging to Messrs. McClean, Grace, Moore-Brabazon, Huntington, Rolls, and Ogilvie, find it hard to recognise now in its expanded state. The new barracks of the Royal Naval Flying School, with the comfortable officers' quarters, the naval aeroplane sheds—something like twenty in number—the shed for the meteorological balloon, and the various subsidiary sheds for stores, etcetera, not to mention the Navy's own tame sewage farm curiously planted in the middle of the sheds, make a regular little town by themselves. The numerous other sheds are now occupied by Mr. Ogilvie, who is making improved Wright machines; by Mr. Jezzi's fast little biplane; by Professeor Huntington, who has taken many tens of pounds weight out of his big biplane and has made it lift reasonably well; by the Hon. Maurice Egerton, who every now and then indulges in new experimental designs in Short biplanes; by Mr. McClean, who besides his hydro-aeroplane experiments at Harty Ferry, has a fine-looking "S.38" type Short biplane; and by the Blair Athol Aeroplane Syndicate, who are constructing several Dunne monoplanes, the building being under the care of Mr. C. R. Fairey, formerly a well-known exponent of stability models.

The Short Brothers' works have grown enormously, thanks to the sound work they have done. The firm is now practically concentrating on two types of machine, the "tractor" hydro-aeroplanes, and the "pusher" land machines of the "S.38" type. Either type is, of its kind, hard to beat. The old twin float 100-h.p. waterplane has probably covered more mileage than any individual waterplane in existence, and I am told that good as is was it is not a "circumstance" to the newer ones, and as for the land machines, Mr. Gordon Bell has often shown that there is nothing better of the type.

As an example of what the tractor-hydros can do I may mention that one of them fitted with an 80-h.p. Gnome recently took the pilot and passenger to 3,000 feet in 13½ minutes carrying petrol and oil for five hours' flying, and this with an 18-lb. anchor and cable, and the additional weight of an internal starting gear for the engine.

Mr. Bell's constant cross-country flights on the "pushers" fitted impartially with 50-h.p. or 80-h.p. engines have been highly successful. The machines seem equally airworthy with either engine. The 80 is much faster, that is all. This "S.38" type has always taken my fancy in spite of the engine being behind. Of course, if one really hits anything end on there is no hope for pilot and passenger, any more than there is on anything else similarly arranged, but the view is so good and the controls so effective that the chance of hitting anything is minimised to the utmost. In the standard "S.38's" the outer sections of both the upper and lower plane is swept sharply back. There is a big fixed tail plane, to which is fixed the elevator flap, big enough to control the machine under any circumstances, but in addition there is a small front elevator carried on tubular steel struts which are fixed to the body-work, fuselage, or nacelle, whichever one likes to call the projecting part where pilot and passenger sit. This elevator really does but little work, but it serves as a useful indicator as to the angle at which the tail elevator is working, and, as one of the pilots said, one doesn't feel so lonely as one would without it.

In the Short works I found very great improvements and everyone seemed tremendously busy. The works have been enlarged time and again. Some neat wood-working machinery has been put in, the machine-shop has been extended, the drawing office is big enough for a dozen draughtsmen or more and fully that number will be at work in a few days' time. The work done is also a distinct advance on the past. The Short machines have always been well and strongly built, but the new ones are even stronger and very much lighter, and the finish is as fine as one can find anywhere abroad. A large number of the "S.38" type are coming through rapidly, and these are full of minor improvements introduced since the machine which is illustrated in this issue was built. Particularly notable are the design and workmanship of the acetylene welded sheet-steel sockets which provide attachments for the lower plane, the nacelle, the chassis struts, tie rods, and stay wires, all in one piece. Steel tubing for struts and stanchions is used wherever possible. The planes are beautifully finished. By the way, I noticed that in the Short machines a very large diameter wire gauze tube is fitted over the Gnome carburettor arrangements, and Mr. Short told me that though the charge in the crank-cases of various engines has often fired back through a defective valve the flame has never flashed out into the machine. This simple safeguard is well worth further development.

In the works I saw a newer type of "pusher" biplane without the front elevator, and with straight planes of small chord, not swept back and up at the tips as in the ordinary "S.38's." It will naturally not be so easy to fly as the standard type, but it will be a good deal faster for its power.

Also, there are many waterplanes being built. Several of these are of 160-h.p. and ought to put up somewhat startling performances. And there is something considerably bigger even than that—but of this I am not at liberty to say anything. Only, watch the new Shorts when they get to work. There is a tendency in some quarters to "crab" the Short machines in general because some of the experimental machines have behaved as the majority of experimental machines do. Though I do not claim to be a scientific expert, or even an aeroplane designer of an ordinary kind, I do claim to have a general idea of the difference between a good machine and a bad one, and the standard type Shorts are among the few on which, being like Mr. Kipling's friend Hurree Chunder Mookerjee—"a fearful man," I have any ambition to fly. Perhaps Mr. Short will make a note of the fact, and when the Short works have grown so large that the supply is level with the demand and there are standard machines in stock, perhaps he will lend me one for my own use, just as motor manufacturers lend cars to their journalistic friends. However, for Mr. Short's sake I hope the demand will exceed the supply for some time to come.

Meantime, some big developments must take place in the near future. I doubt very much whether even the most enthusiastic of the inhabitants of Eastchurch realises how big a thing aeroplane building is going to be in the future, and the millions upon millions of capital it is going to employ—and on which it is going to pay good dividends. Some of us have been through all this before in the motor trade, when people of seeming intelligence told us that no one would ever use the nasty, smelly, dangerous things, and when financiers refused assistance. Consequently, we know that those firms who get a firm footing now are in for a good time in the future—and that time is not far away at present. I only hope that the Eastchurch colony, the Short Brothers, Mr. Ogilvie, and the makers of the Dunne machines may be among the first to profit by it.—C. G. G.

Aviation at Brighton.

The rough surf, which prevailed for most of the week, prevented the Radley-England waterplane from going out during the last week. On its trials the machine seems exceedingly stable, for Mr. Gordon England, on a recent trip, attempted to stand it on its nose—a common fault of waterplanes—and found it impossible. Lieut. Ashton, R.F.C., paid a visit to Brighton on Monday last week. Mr. E. C. Pashley, on Sunday, 25th, flew to Brighton with a passenger and made a beautiful landing at Roedean. He returned in the evening, circling the pier, and reached Shoreham in 15 minutes. The weather was ideal the whole day, and the crowded front obtained a perfect view of the machine, which Mr. Pashley was flying low for their benefit.—E. L. Dower.

On Monday Mr. England was flying when, in alighting, one float collapsed and sank, letting the whole machine down into the water, but not doing much damage. Mr. England expects to have the machine out again shortly.

The Waterplane Circuit of Britain.

Preliminary conditions for the "Daily Mail's" Waterplane Circuit of Britain have now been issued. All competitors are to start from Southampton, and will be obliged to make a compulsory stop of at least half-an-hour at the various controls. These stops will not count in the maximum time of 72 hours within which the course must be completed.

The controls at present arranged are as follows:—Southampton, Dover, Yarmouth, Scarborough, Montrose, Peterhead, Cromarty, Oban, Belfast, Dublin, Milford Haven, Falmouth.

It will be noticed that there is no control between Cromarty and Oban, and one gathers that this has been done purposely so that if a competitor cares to fly overland across Scotland following the line of the Caledonian Canal he can do so instead of risking the almost continuous bad weather round Cape Wrath. Unfortunately, this short cut quite does away with any idea of the course being a true circuit of Great Britain, but the population northward of the Caeldonian Canal is so small that very little of the demonstrative value of the flight will be lost by cutting that part of the country out.

From the Mull of Kintyre, which is the south-western point of Scotland north of the Clyde, to Portaleen Bay, the north-east point of Ireland, is only about fourteen miles. It will be noticed that there is no control between Belfast and Dublin, so that if a competitor cares to risk flying over the mountainous country between Belfast and Dundalk Bay he can cut off quite a considerable distance. From Rosslare to the Welsh coast below Fishguard is in or about 30 miles.

It is also possible to cut off a piece of very bad coast-line by flying across Cornwall from Milford Haven to Falmouth.

A passenger must be carried throughout the competition. Quite a wise provision is made that pilots and passengers may be changed during the course, as the competition is framed as a test of machines and not of the staying power of the pilots. Also this makes it much more likely that the prize will be won at an earlier date than it would be otherwise.

Each machine will have five parts of the motor and five parts of the machine marked by the R.Ae.C., and at least two marked parts of each of these five must be in place on arriving at each control. Floats, chassis, and propellers will not be marked.

Machines must not alight on land, but they may be taken ashore at any control for repairs and replenishments, but the time occupied in doing so will count as part of the flying time.

The Aerial Derby.

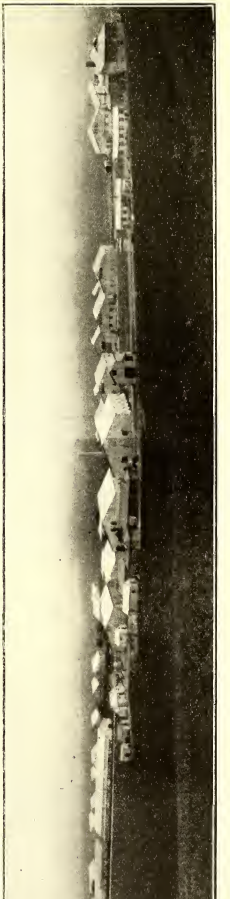
It is advertised that the Aerial Derby this year is to be a handicap race. Surely this is a mistake in policy as it looks like reducing a classic race to the level of a selling plate. Doubtless the alteration is due to a laudable desire on the part of the promoters to provide the public with a close finish, and there might be a fear that owners of obviously slow machines would refuse to enter them in a scratch race but might enter for a handicap.

As an alternative why not run a handicap in conjunction with the "Derby," allotting a start to each competitor and awarding the prizes on time, but starting the machines at intervals of a minute as was done last year? This would ensure sufficient entries. So far as the finish is concerned there is just as much chance of a runaway win in a handicap as there is in a scratch race.

The promoters may take it as certain that the majority of the likely competitors would rather take their chances on the merits of their machines than rely on a purely arbitrary handicap based on the handicappers' estimate of a pilot's skill and the speed at which he has flown round a marked course.

The only possible form of handicap in such a race would be one based on engine capacity or petrol consumption, much as colts and fillies carry different weights in the real Derby.

The start for the Aerial Derby will take place at 4.15 p.m. The course has been altered considerably for the better. The turning points at Esher and Purley, which are difficult to identify, have been elided, and the Grand Stand at Epsom, which is visible for miles, has been substituted. Thus the course is Hendon, Kempton Park (water works), Epsom (grand stand), Purfleet (watertower), Epping (parish church), High Barnet (station), and Hendon.



EASTCHURCH AS IT IS. Reading left to right one sees the old sheds, then the two long sheds of the Short Brothers' factory with six of the Royal Aero Club's sheds in front of them. The two sheds to the right of them are Mr. Ogilvie's, which are at right angles to the rest. All the foreground is occupied by the new Naval Flying School, of which various small sheds and petro stores, and several Bleriots, are the first signs. Slightly to the left of the centre are the hangars and sheds for the Avro type. To the extreme left are the officers' quarters. In the old days, only two years ago, the whole aeroplane community was housed in the half a dozen buildings on the extreme left of the picture.

Flying at Hendon.

Thursday was an eventful day at Hendon, when a very distinguished company assembled to witness the christening of the famous 80-h.p. Gnome Blériot two-seater in which Mr. Hamel and Mr. Dupree made their celebrated Dover-Cologne flight. This machine has been presented to the New Zealand Government by the Imperial Air Fleet Committee. An experienced journalist would say that the monoplane was gay with bunting as it stood in the sunshine awaiting the approach of Lady Desborough and her party, for a large flag was suspended from each wing; also, a small bottle of champagne dangled lonesomely from the propeller shaft. A battery of cinematophotographers took up a commanding position upon the left; supported by a full company of sharp-shooters, in the persons of ordinary Press photographers, ranged picturesquely—and with a notable lack of stability, both lateral and longitudinal—upon ladders of varying height. Many of the visitors were manifestly strangers to the aerodrome; one elderly gentleman was heard to remark: "So that is what they call an army airship?" No one dared laugh and no one dared answer for fear that the questioner might be a wag and not an old gentleman at all.

Lady Desborough arrived, accompanied by Lord Desborough, Sir Joseph and Lady Ward, the Hon. W. T. Mackenzie (High Commissioner for New Zealand), and Miss Mackenzie, Lord Charles Beresford, Sir James Buchanan, Mr. Wray Palliser (Chief Secretary of the New Zealand Government Offices). Sir Thomas Coward, Mr. C. J. Fairfax Scott, Mr. A. Rosenthal, Mr. H. Rosenthal, M. Norbert Chéreau, Capt. Tyrer, and many ladies. Lady Desborough, to the relief of many, showed that she was not too familiar with the use of a hammer, but succeeded in the second blow in shattering the little flask, and named the monoplane "Britannia," amid the cheers of onlookers, punctuated by the eerie cries of foiled photographers as they beseeched—vainly—the less distinguished to get out of the fire-zone.

Graceful speeches were exchanged on behalf of New Zealand, of the committee and of Lady Desborough, who was presented by the High Commissioner's daughter with a beautiful pendant, emblematic of good fortune. The crowd then overflowed the barriers and surrounded the machine, even the major-general with his megaphone could not prevail; even the tactful Capt. Tyrer could not distinguish the distinguished from the undistinguished, and so we all remained in the field, the sheep with the goats.

Then another cheer went up, somewhere over on the left; a different sort of a cheer this time; there was something about it that brought one up standing, wondering what it might be; then somebody said "Desoutter," half-a-dozen echoed the name, it ran through the crowd like quickfire and a roar went up on all sides . . . there weren't so many strangers after all. Sure enough, it was Marcel, wrapped in many overcoats, sitting in a car, at the centre of a seething mob; just the same old Marcel with the same quiet, subdued smile, not perceptibly moved, not changed in the slightest degree, and looking exceedingly fit. He has proved himself as sound a philosopher as he is an aviator. Probably he knew already what his comrades and the anonymous habitués of Hendon thought of him. If there was any doubt in his mind it was removed on Thursday. For five minutes even the "Britannia" remained unattended in the field, and Lady Desborough made her way through the enthusiastic crowd to shake Marcel Desoutter warmly by the hand.

This demonstration over, affairs resumed their normal course, Mr. Hamel made two flights in the New Zealand machine, taking with him Sir Joseph Ward on the first occasion and then Lord Desborough.

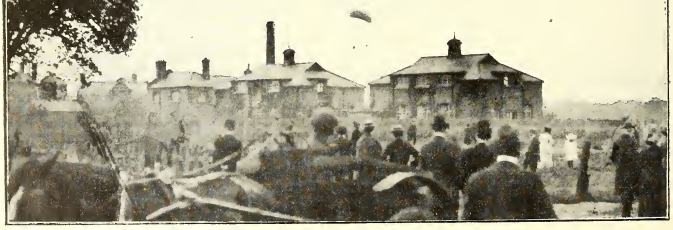
Many other machines were up during the afternoon, M. Noel, in the G.-W. Maurice Farman, taking several passengers. Mr. Grahame-White also made a few flights in the same machine taking with him certain of the aerodrome's guests. Mr. Turner and M. Baumann were up in the 60-h.p. and 35-h.p. Caudrons, respectively. Mr. Lee Temple also was up in his Caudron. Mr. Slack and Mr. Hall were out in their 50-h.p. Blériots, and M. Verrier gave a new Maurice Farman its maiden flight.—A. B.

Empire Day.

Saturday, being Empire Day, a special effort was made by the management to insure a successful afternoon. Observing these things the catering department erected a most decorative system of marquees and bathing tents within the half-crown enclosure, and equipped them with waiters in the garb of ship's stewards, and tea-tables—there was also tea to be had. To these preparations the general public responded enthusiastically, turning up in record numbers, while, to complete, as it were, the redness of the day's letter, no less than twenty-one several aviators were seen in the air, flying fourteen machines of eight different types.

There should have been a twenty-second aviator aloft, and a ninth type, for Mr. Whitehouse, of "Dep." and Handley Page fame, was seen wandering disconsolately from friend to friend. "What's the matter with the 'H.P.'?" inquired a tactless one. "They've taken it to pieces to find a certain Moment of Inertia," replied he of the clipped wings. "A *moment* of inertia, did you say?" retorted the other. "Why dismantle a machine to look for a mere moment when here is our *sympathique* Whitehouse burdened with a whole bally afternoon of inertia!"

Three flying visitors arrived during the day; in the morning



"Captain Penfold" landing by parachute out side the gates of the London Aerodrome.

Mr. Gordon Bell brought the handsome Martin-Handasyde (120-h.p. Austro-Daimler) over from Brooklands, and as she stood in the sunshine, the centre of an admiring crowd, the powerful monoplane with her strongly trussed wings and her boat-like prow, certainly deserved her sobriquet "the magnificent." Mr. Gordon Bell made one or two flights during the afternoon, but was prevented from competing in the speed handicap by the splitting of a casting in the chassis which, though it did not affect the flying wires, might have given trouble in starting or landing, so he also suffered from inertia.

In the morning also, Lieut. Kennedy, R.N., brought the Sopwith tractor biplane (80-h.p. Gnome) across from Eastchurch, but, unfortunately, found an obscure anchorage for her at the end of the Grahame-White hangars, and so—as she made no flights during the afternoon—this beautiful machine was not seen at all by the majority of spectators.

The third visitor was a military Maurice Farman, from Farnborough, piloted by Capt. Dawes, R.F.C., accompanied by a passenger. He approached the aerodrome at about 5,000 ft., and landed with a spectacular spiral, to the wild excitement of the two other Maurice Farmans already on the ground, who insisted that their pilots, MM. Verrier and Noel should take them up forthwith and circle round their visiting comrade.

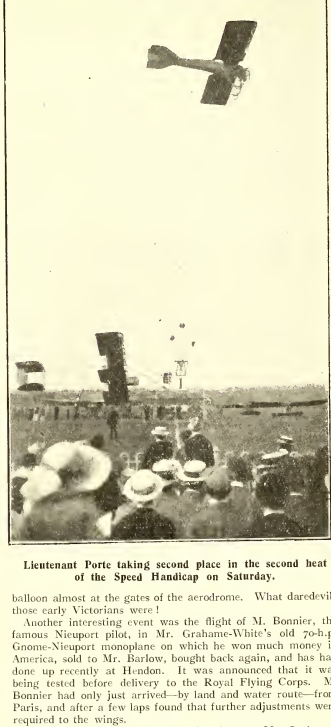
Six aviators flew Imperially for a cup presented in honour of the day by Mr. J. E. Withers. The race was a speed handicap in two six-lap heats and an eight-lap final. For the first heat, Mr. Brock, in a Deperdussin (35-h.p. Anzani) (2 mins. 2 secs. start), Mr. Turner in a Caudron (60-h.p. Anzani) (58 secs. start), and M. Verrier (scratch) in a M. Farman (70-h.p. Renault) started. The latter retired, and Mr. Brock won in 7 mins. 28 secs. against Mr. Turner's 11 mins. 49 secs. The second heat was between M. Noel in the G.-W. M. Farman (1 min. 38 secs), Sig. Nardini in his Deperdussin (50-h.p. Gnome) (1 min. 6 secs), and Lieut. Porte in the big Deperdussin (100-h.p. Anzani). This heat was a lively and exciting affair. M. Noel flew so low that his wing-tips seemed, when he banked, to be decapitating the dandelions; he handled the machine in a masterly fashion and deserved better luck than he got. Sig. Nardini passed over him at a fine pace on the far side of the ground. Lieut. Porte's big machine hurtled round the course at great speed, his 100-h.p. engine drumming in a quietly threatening manner which—if engines had nerves—would have "unmanned" any competitor less than a 110-h.p. Canton-Unné. He overhauled M. Noel on the finishing line in most dramatic fashion, and took second place, his time being 10 mins. 7 secs. Sig. Nardini winning in 9 mins. 40 secs., and M. Noel coming third in 10 mins. 40 secs.

Thus the final was between three "Deps" and a Caudron—also between three Anzanis and a Gnome. Lieut. Porte was at scratch, Sig. Nardini received 39 secs., Mr. Turner 3 mins. 3 secs., and Mr. Brock 3 mins. 58 secs. The course of the final was not easy to follow; one had lost count of Mr. Brock's circuits by the time Lieut. Porte started—nearly four minutes later. Mr. Brock carried off the Imperial Cup, completing the 12-mile course in 14 mins. 47 4-5 secs. Mr. Turner took the second prize of 20 sovereigns in 15 mins. 12 secs. Sig. Nardini secured the humble "fiver" in 15 mins. 23 secs., and so the poor Lieut. Porte got none, in 15 mins. 24 3-5 secs.

Many interesting things happened during the remainder of the afternoon. Mr. Hall, on a 50-h.p. Gnome-Blériot, raced Mr. Temple, on his 35-h.p. Anzani-Caudron, home from Park Royal, where the two had been exhibitioning themselves; the weaker vessel received a start of 7 mins., and by the use of reasonable guile—flying much lower than the Blériot—won by 2 mins. Mr. Hall approached the aerodrome at some height, and was at first mistaken for Mr. Hamel, a compliment to his handling of the machine.

Mr. Hamel arrived later, having flown from Ranelagh; he landed, as usual, with a delightful spiral which pleased the company immensely.

One also had a little glimpse back into the early history of aerial navigation. "Ladies and Gentle Men," observed the megaphone, "if you look over to the east you will see a parachute descent." We looked to the north-west and saw the unusual and dangerous performance as "Captain Penfold" dropped from not more than 300 feet from the O.T. hot-air balloon almost at the gates of the aerodrome. What daredevils those early Victorians were!



Lieutenant Porte taking second place in the second heat of the Speed Handicap on Saturday.

Another interesting event was the flight of M. Bonnier, the famous Nieuport pilot, in Mr. Grahame-White's old 70-h.p. Gnome-Nieuport monoplane on which he won much money in America, sold to Mr. Barlow, bought back again, and has had done up recently at Hendon. It was announced that it was being tested before delivery to the Royal Flying Corps. M. Bonnier had only just arrived—by land and water route—from Paris, and after a few laps found that further adjustments were required to the wings.

Other pilots who were seen in the air were Mr. Grahame-White in his Maurice Farman, Mr. Gates in the same machine, Mr. Valentine in Sig. Nardini's Deperdussin, Mr. Slack and Mr. Cheeseman in Blériots, the latter flying excellently on an old 35-h.p. school machine, and Mr. Manton in the old, old school box-kite.

Lieut. Malone, R.N., was up in the 80-h.p. Caudron belonging to the Navy. During one flight with a passenger he went off across country and landed in the Old Deer Park at Richmond, and then went down river to Ranelagh, where Mr. Hamel was performing, and "so home"—as Mr. Pepys would say.

M. Baumann also flew well on the little 35-h.p. Caudron.

Altogether, the large concourse of general public must have been so elated by the afternoon's excitement that even the task of scaling the rocky pinnacles of Colindale Avenue on their way home could not have sapped their spirit.—A. B.

Our One Fine Sunday.

Sunday's flying was no less entertaining than that of Saturday, although there was no competitions. The Martin-Handasyde having been repaired, Mr. Bell proceeded to fly it at intervals throughout the afternoon, taking several passengers, handling the machine beautifully, and finally vanishing into the sunset with his fiancée, Miss Wheatley, as passenger on his return journey to Brooklands.

Mr. Temple and M. Baumann on the little Caudrons, and Mr. Turner on the bigger one, evoluted effectively. On the Deperdussins, Mr. Nardini and Mr. Brock performed with their usual skill, the latter going up to something like 3,000 ft. on the little 35-h.p. On the Maurice Farmans, M. Verrier went up and down with passengers all day with the frequency and energy of a liftman. Mr. Grahame-White, Mr. Noel, and Mr. Gates also flew the G.-W. Maurice Farman until Mr. Gates had a slight misunderstanding with a rut in landing, which demolished a wheel, and caused the stately machine to behave momentarily like a kicking donkey. Mr. Manton flew one of the antiquated school box-kites in a surprisingly good form. M. Bonnier late in the evening turned out the old Nieuport, but came down soon afterwards owing to the engine misbehaving. Mr. Hall and Mr. Slack on their Blériots flew vigorously and neatly.

A particularly nice flight was done by Mr. Loftus Bryan, of the South of Ireland Horse, who took up Mr. Slack's Blériot, now known as "the elderly and respectable," to about 1,100 ft., came down in a perfectly straight glide without apparently varying his angle a degree to within 100 ft. of the ground, and made an excellent landing. Mr. Bryan has only just taken his certificate in France, and this is his first flight on a 50-h.p. Blériot in England. He shows every symptom of developing into a very excellent flier indeed, and is quite a credit to the distressful country.

Miss Trehawke-Davies, still looking very ill as the result of her motor smash but as plucky and cheerful as ever, went with Mr. Hamel on the tandem Blériot to Brooklands and returned later at about 5,000 ft., from which altitude they came down in a magnificent spiral to about 1,000 ft., and thence descended with the engine standing still in the flattest glide that anybody has ever seen a Blériot do at Hendon; in fact, the machine seemed to be gliding at its ordinary flying angle.

Thereafter they went up again, and Mr. Hamel proceeded to do his favourite switchback trick round the aerodrome. The contortions of a number of ladies, who were standing out on the course watching the performance, when Mr. Hamel seemed about to annihilate them by apparently alighting at top speed on their heads would make the fortune of any ragtime review if they could be reproduced on the stage.

Altogether it was a most entertaining afternoon, and perhaps the most wonderful thing about it was that everything stopped before dark, simply because every pilot in the place was thoroughly tired with the amount of flying he had done, although several thousands of people remained until every machine had retired to its shed.—C. G. G.

M. Collardeau's Luck.

There is a story of an Irish priest who was trying to explain to one of his flock what a miracle was, and asked him what he would call it if he fell off a forty-foot ladder and escaped unhurt. "I'd call it great luck, ye're riverence," said the man. "Well! Suppose the same thing happened next day, what would you call it?" "I'd say it was a quare coincidence," was the reply. "But suppose it happened a third day, what then?" asked the priest. "Begob, ye're riverence, I'd call it a dam silly habit," said the man—and the priest gave him up as hopeless.

On Saturday last, M. Collardeau, testing a Bréguet biplane for the Royal Aircraft Factory, and carrying as passenger Mr. Ellerton, one of the gentlemen whose duty it has been to inspect "B.E.'s" built under contract for the Royal Flying Corps, took a turn somewhat sharply, sideslipped, touched a wing-tip, and turned a somersault, demolishing the machine with great efficiency. Pilot and passenger were severely shaken, but not, so far as one can gather, seriously injured.

After his smash at Juvisy, his aerial collison with the Siamese lieutenant Nai Thip, the loss of his tail at Hendon recently, and this latest incident, it looks as if M. Collardeau was trying his guardian angel rather high, and had better change his make of machine or walk.

Fire!

Mr. Collyns Pizey, the well-known Bristol pilot, and a passenger had a remarkable escape from death at Larkhill on Monday evening. Mr. Pizey, who arrived late in the afternoon from Italy, went up in a tractor biplane, accompanied by Mr. H. Fellows. They had reached about 1,200 feet when an inlet valve broke, and the flames caught the carburettor. The pilot immediately turned off the petrol, and commenced a steep glide. During the descent the passenger's seat, which is close to the carburettor, became so hot that Mr. Fellows had to stand on it. The pilot made a splendid landing, and Mr. Pizey and Mr. Fellows immediately jumped out. They had barely got clear of the machine when the petrol tank exploded, and the machine was destroyed.

Here is a lesson which must not be neglected. Ever since this paper started it has agitated for proper protection against fire, yet engine firms go on turning out carburettor arrangements which are a continual danger. Worse still, no one is making any attempt at all to produce an engine using heavy oil, which is proof against this type of fire. Every man who dies through fire on an aeroplane has been murdered by sheer carelessness.

The First Wilbur Wright Memorial Lecture.

On May 21st, Mr. Horace Darwin, M.A., F.R.S., delivered the first Wilbur Wright Memorial Lecture at the Royal United Service Institution. Mr. Darwin chose for his subject "Scientific instruments, their design and use in aeronautics," adopting as the motto of his lecture "The chief cause of failure in operation is the ill-determination and measurement of the forces and actions of bodies." After some appreciative remarks on the subject of the Wright Brothers, Mr. Darwin proceeded to describe the utility of instruments on aeroplanes, and the difficulties of using them owing to the movement of the machine in three dimensions, and to the vibration caused by the engine. He devoted considerable attention to speed indicators operated by Pitot tubes, and seemed on the whole to conclude that no such instrument could be more than approximately accurate. For instance, if a speed meter gives the correct speed near the ground, it would not be correct at high altitudes owing to the change in the density of the air.

He mentioned a manometer ascribed to Mr. Short of the Royal Aircraft Factory, which uses two liquids of different densities which do not mix. It is somewhat peculiar that somewhat similar instruments to those of this Mr. Short have also been patented by one of the well-known Short brothers, to whom he is not related.

Of its kind the lecture was decidedly interesting, but scarcely such as would appeal to the greater number of people interested in aviation to whom a lecture in memory of the late Mr. Wilbur Wright ought actually to appeal.

After the lecture Mr. Griffith Brewer gave a sympathetic address on the subject of Wilbur Wright and his work, with which Mr. Brewer has been so intimately connected since the Wright brothers first flew.

More "B.E.'s."

One learns that thirty more "B.E.'s" were ordered last week from three firms, one of which has never built even one satisfactory machine of its own design. Meantime, firms whose machines are at least as good as the "Official" design, and in some cases better, are waiting for War Office orders. Thus is independent experiment and enterprise discouraged in this country, and thus is progress in aeroplane design blocked by the conceit of jacks-in-office who use their official position to foist their own out-of-date design onto the Royal Flying Corps instead of encouraging the best brains in the country to produce improved types. And we are still without a single squadron of the Royal Flying Corps at full strength. Thank heaven for the British Navy.

The Latest "Dope."

In France, one of the most popular and successful "dopes" for aeroplane fabric is "Novavia," a composition which is absolutely non-inflammable, and which does not flake off the fabric when it sets. In order to fulfil the conditions that certain machines shall be entirely of British material, MM. Chazal and Genrot, who hold the British rights in "Novavia," are starting a laboratory for its production in this country. They have already manufactured a certain amount for machines which are being built to Government orders.

AERONAUTICAL SOCIETY READING ROOM.

The Death of Lieut. Desmond Arthur, R.F.C.

It is with the deepest regret that one chronicles the death of Lieutenant Arthur, R.F.C., who was killed at Montrose on the morning of Tuesday last, May 27th.

Desmond Lucius Arthur was born at Glanomera, County Clare, of a well-known Irish family, on March 31st, 1884. He received his first experience of aviation at the Leopardstown Meeting in September, 1910, when he was the first passenger to go up in Ireland, the pilot being the late Cecil Grace. Early in 1912 he joined the Bristol School and took his certificate (No. 233) on a Bristol monoplane, in the course of his tests going up to about 4,000 feet, instead of the regulation 120 feet. Last year he took part in the second Leopardstown Meeting, at Dublin, but owing to engine failure he could not start in the big race, only saving an accident by fine skill.

Formerly a member of the Army Motor Reserve, he was appointed on May 27th, 1911, to the 5th Battalion Royal Munster Fusiliers (Special Reserve). He was appointed on probation to the Royal Flying Corps last year, and passed through the Central Flying School in the first course of this year. Mr. Arthur's appointment to No. 2 Squadron R.F.C. (Montrose) appears in the Army List for May undated, but he joined his squadron on or about May 1st

Personally, Desmond Arthur was a good friend, and a fine specimen of the best class of Irish sportsmen. As a flier he had any quantity of pluck and skill, but was always inclined to be over-daring, qualities which made one anxious for his safety in time of peace, but would have been of high value in war. His universal popularity will cause his loss to be felt by very many friends.

The following account of the accident was received from Montrose about midday on Tuesday :—

"A fatal accident occurred this morning at 7.45 near Lunan Station, two miles from Montrose Aerodrome, in which Lieut. D. L. Arthur, of the 5th Royal Munster Fusiliers, was killed. Flying had commenced as usual in the early morning, and Lieut. Arthur went up for a test flight on 'B.E.' 205, the machine which had been piloted from Farnborough to Montrose three days previously by Major Burke. After a short flight he descended and said the machine was flying splendidly, and added that he was to take it for an extended flight.

"He had been away for some time and was seen beginning to make a spiral descent over Lunan Bay. When at the height of 2,000 feet a loud report was heard and the right wing of the machine collapsed. It turned over and crashed to the ground, the pilot being picked up dead 156 feet from the wrecked aeroplane. Medical assistance was summoned, but it was found that death must have been instantaneous, the body being terribly mutilated."

The Week's Work.

MONDAY, May 19th.

R.F.C., Central Flying School.—Moderate West wind, bright early. Wind strong and gusty later, dull and cold. On Avro 430, Major Fulton with Lieut. Todd 6 mins, with Lieut. Mills 6 mins, with Lieut. Hordern 6 mins, with Lieut. Picton-Warlow 6 mins, with Capt. Massy 20 mins. On Avro 432, Major Fulton with Lieut. Picton-Warlow 30 mins, with Lieut. Small 30 mins; Lieut. Stopford 15 mins. On Avro 433, Major Fulton with Lieut. Small 14 mins. A.M. Higginbottom with Lieut. Shekleton 10 mins, with Capt. Massy 10 mins, with Lieut. Maude 7 mins, with Lieut. Brodribb 15 and 12 mins, with Sergt. Jarman 20 mins.

On M. Farman 411, Engr.-Lieut. Randall 49 mins; on M. Farman 418, Lieut. Shepherd 5 mins alone, with Lieut. Gaskell 20 mins, with Lieut. Sitwell 8 mins; Lieut. Pretyman 28 mins; Capt. Birch 12 mins; Lieut. Gill 15 mins; Lieut. Cutler 15 mins; Lieut. Wilson 20 mins. On M. Farman 427, Lieut. Shepherd 8 mins alone, with Lieut. Noel 13 mins.

On M. Farman 426, Capt. Salmond with Lieut. Fowler 11 mins, with Capt. Hoare 40 mins, with Capt. Newell. On "B.E." 416, Lieut. Stopford 10 mins alone, with Lieut. Edmunds 10 mins, with Capt. Fawcett 10 mins, with Lieut. Morgan 9 mins, with Lieut. Harvey Kelly 10 mins, with Capt. Hoare 9 mins. On "B.E." 417, Capt. Salmond 8 mins alone, with Lieut. Rodwell 12 mins.

On H. Farman 435 Major Gerrard 6 mins. On H. Farman 440 Major Gerrard with Lieut. Reilly 10 mins. On H. Farman 444 Major Gerrard with Lieut. Mapplebeck 17 mins, with Lieut. Corballis 12 mins, with Lieut. Vaughan 12 mins, with Lieut. Fuller 10 mins, with Lieut. Kershaw 12 mins and 10 mins alone.

R.F.C., Farnborough.—On Maurice Farman 305, Lieut. Gould 5 mins; Lieut. Holt 25 mins, 70 mins to Brooklands and back with Capt. Beor, 10 mins round aerodrome, 35 mins to Odiham and back with Lieut. Thompson; Capt. Board 10 mins. On Bréguet 210, Major Raleigh 17 mins, taking Lieut. Chinnery and Capt. Beor; Lieut. Playfair 20 mins; Sergt. Hunter 8 mins; Capt. Shepherd 5 mins, 6 mins with Lieut. Chinnery; Lieut. Chinnery 12 mins. On Maurice Farman 306, Capt. Board 40 mins, and 15 mins with Lieut. Thompson.

R.F.C., Montrose.—Capt. Herbert on M. Farman one test flight.

Hendon.—At Graham-White School, Mr. Manton on No. 2 Blériot circuits. Sir Bryan Leighton straights on No. 7 biplane, later semi-circuits. Mr. Power semi-circuits with Mr. Manton.

At W. H Ewen School, Mr. Turner test on 35-h.p. Caudron No. 1. M. Baumann with pupils on 35-h.p. Caudron No. 2. Messrs. C. George, Jagenberg, and Pendlebury rolling; Mr. Zubiaga circuits; Mr. Goodden half-circuits. Later M. Baumann fine exhibition flight, finishing with long spiral glide. In evening, Mr. Turner again on 35-h.p. Caudron No. 1 tests.

At Blériot School, Mr. R. Desoutter on No. 4 in stiff breeze, brevet, but after two circuits and one figure of 8 found wind too strong and discontinued his attempt until dusk, when he tried again, and at 300 ft., did excellent test, alighting very well indeed. Capt. Cox on No. 1 taxi rolling.

At Deperdussin School, Colonel Smyth rolling on taxi 2 : improving. Mr. Jaques doing fairly well.

Brooklands.—At Vickers School, early Mr. Knight on biplane with Mr. Beevor straights and circuits. Mr. Waterfall on No. 5 mono across country at 4,000 ft. Mr. Orr Paterson fig. 8's on biplane. Mr. Knight testing new biplane with 70-h.p. Gnome. Mr. Wight circuits at 1,100 ft. Capt Wood on biplane circuits Mr. Mitchell on No. 3 mono excellent straights. Mr. Andreae on No. 5 mono. In evening Mr. Barnwell on biplane alone and with passenger. Mr. Knight testing No. 3 mono, Mr. Mitchell and Mr. Andreae straights. Mr. Orr Paterson circuits on biplane. Mr. Beevor on biplane circuits with Mr. Waterfall. Mr. Knight (pilot) with Mr. Knight (pupil) and Mr. Beevor circuits good height.

At Bristol School, Mr. Bendall test. Mr. Merriam with Lieut. Morgan and Mr. Bernard Howard (new pupil). Lieut. Duncan circuits, Lieut. Broder, Lieut. Ed. MacClellan figures of eight. Mr. Merriam with Mr. Bernard Howard and Mr. Bendall with Mr. Grahame Harris.

Salisbury Plain (Bristol School).—Mr. Pixton with Lieut.-Col. Hamilton and Major Hewetson. Messrs. Adams, Grey, and Dolaplane 15 mins, Mr. Busteed with Lieut.-Col. Hamilton and Lieut. Burns and then on tractor biplanes.

Brighton-Shoreham.—Lieut. Ashton arrived on M. Farman.

TUESDAY, May 20th.

R.F.C., Central Flying School.—Misty, very dull, some rain. Strong, gusty westerly wind. On M. Farman 411, Lieut. Shepherd 5 mins alone, with Lieut. Noel 6 mins, with Lieut. Gaskell 14 mins; Lieut Wanklyn 5 mins. On M. Farman 418 A. M. Collis, 12 mins. On M. Farman 426, Capt. Salmond with Lieut. Stopford 40 mins, with Lieut. Harvey Kelly 17 mins, with Capt. Fawcett 11 mins, with Capt. Hoare 24 mins. On H. Farman 444, Major Gerrard with Lieut. Adams 10 mins, with Lieut. Vaughan 12 mins,

The Event of 1913

GHENT
International Exhibition

May to October

with Lieut. Haithorne 10 mins. On H. Farman 445, Lieut. Shepherd with Lieut. Gill 10 mins.

R.F.C., Farnborough.—On Bréguet 210, Major Raleigh 13 mins; Lieut. Chinnery 15 mins; Capt. Beor 7 mins; Capt. Shepherd 4 mins; Sergt. Hunter 7 mins; Lieut. Playfair 16 mins. On Maurice Farman 305, Lieut. Holt 38 mins, 32 mins with Capt. Dillon, Oxford L.I.

Hendon.—At Grahame-White School, Mr. Tone Bayetto on No. 2 Blériot, starting brevet tests, brought down by engine trouble.

At W. H. Ewen School, Mr. L. Turner test on 35-h.p. Caudron No. 1. Mr. Zubiaga first half of brevet test, 200 ft. Starting again, he completed four figures of 8 at 400 ft. M. Baumann's pupils on 35-h.p. Caudron No. 2 Lieut. W. C. Hicks circuits. Messrs. Pendlebury and Cowling rolling. Lieut. R. C. Bewes first instruction. Mr. Turner on 60-h.p. Caudron alone and with passengers.

At Blériot School, Mr. Gandillon on No. 4 three circuits, landing with well judged glide from 200 ft. Capt. Cox rolling on No. 1. Mr. R. B. Slack on No. 5 (50-h.p. Gnome) 20 mins across country toward Harrow.

Brooklands.—At Vickers School, early Mr. Knight testing No. 5 mono. Mr. Wright circuits; Mr. Andreae straights, Mr. Mitchell on No. 3 mono, straights. Mr. Knight on biplane with his namesake (pilot). Mr. Beevor with Mr. Waterfall. Lieut. Blatherwick circuits on No. 5 mono. Mr. Andreae straights on No. 5, and Mr. Barnwell circuits. Mr. Beevor first time alone on biplane, straights. Mr. Waterfall on No. 5 mono, circuits. Mr. Beevor circuits alone on biplane; good progress. Mr. Waterfall on No. 5 moro, landed outside Aerodrome owing to engine stoppage and damaged machine through hitting a tree.

At Bristol School, Mr. Merriam test, then with Mr. Bernard Howard, Mr. Grahame Harris, and Lieut. Morgan. Lieuts. Broder, Duncan, and Ed. MacClellan fig. 8's, etc. Lieut. E. MacClellan for other half of brevet exceedingly well. Mr. Bendall circuit. Rain stopped flying.

Salisbury Plain (Bristol School).—Six o'clock, Mr. Busteed on tractor biplane with Lieut. Spencer Grey, R.N. Mr. Pixton with Lieut.-Col. Hamilton and Major Hewetson; Mr. Adams alone. Mr. Garnett taxi-ing on mono. Wind and rain later.

Brighton-Shoreham.—Lieut. Ashton left for Southampton in high wind, en route for Salisbury, badly bumped when leaving Slow progress against wind.

WEDNESDAY, May 21st.

R.F.C., Farnborough.—On M. Farman 306, Capt. Board 15 mins, Lieut. Atkinson 5 mins. On M. Farman 305 Lieut. Holt 63 mins; Capt. Reynolds 5 mins.

R.F.C., Montrose.—Few flights during forenoon. Capt Longcroft arrived from Farnborough at 4.20 on B.E. 273 Capt. Becke from Perwick during evening on B.E. 272.

Hendon.—At W. H. Ewen School, M. Baumann at 4 20 a.m. on 35-h.p. Caudron No. 2. Too windy for pupils.

Brighton-Shoreham.—Mr. Eric Pashley flew two circuits on Blondeau-Hewlett Farman and found it very bumpy.

At Avro School, Mr. Raynham circuits on Avro (35-h.p. Green).

Salisbury Plain (Bristol School).—Mr. Busteed with Lieut.-Col. Hamilton and Major Hewetson, Mr. Pixton with Mr. Garnett. Messrs. Adams, Grey, and Delaplane alone. Mr. Busteed on tractor. In evening Messrs. Busteed and Pixton with pupils.

THURSDAY, May 22nd.

R.F.C., Central Flying School.—Misty early, fine and bright. Strong, gusty south-west wind all day. At 5.45 a.m. six officers and machines to Perham Down Camp for review by General Sir Horace Smith-Dorrien. Major Fulton on Avro 433, Major Trenchard on M. Farman 431, Major Gerrard on H. Farman 440, Lieut. Shepherd on H. Farman 445, Capt. Salmond on "B.E." 417, Lieut Stopford on "B.E." 416. Review held at 12 noon and after all troops had marched past saluting base, the ground was cleared and nine machines, five from the C.F.S., and four from Lark Hill, were flown past in excellent form, and afterwards flown back to Upavon.

In the evening, on Avro 433, Major Fulton with Lieut. Todd 10 mins, with Lieut. Shekleton 5 mins, with Lieut. Maude 5 mins, with Lieut. Brodribb 5 mins. On M. Farman 418, Engr.-Lieut. Randall 15 mins; Lieut. Wilson 11 mins; Lieut. King 7 mins; Lieut. Wanklyn with Lieut. King 6 and 8 mins; Lieut. Gill 10 mins. On M. Farman 431, Engr.-Lieut. Randall 20 mins, Master Mechanic T. O'Connor 15 mins; Asst.-Paymr. Lidderdale 10 mins. On M. Farman 426, Capt. Salmond with Capt. Hoare 20 mins, with Lieut. Edmunds 35 mins, with Capt. Fawcett 25 mins. On B.E. 416, Lieut. Stopford 9 mins alone, with Capt. Newell 8 mins, with Lieut. Morgan 7 mins, with Lieut. Rodwell 7 mins. On H. Farman 435, Major Gerrard with Lieut. Reilly 15 mins, Lieut. Reilly 30 mins. On Short 402, Major Gerrard with Lieut. Adams 17 mins.

R.F.C., Farnborough.—On Bréguet 210, Capt. Shepherd 14 mins; Lieut. Chinnery 14 mins; Sergt. Hunter 5 mins; Lieut. Playfair 8 mins.

R.F.C., Montrose.—Capts. Becke and Longcroft, with Lieuts. Lawrence and Arthur on B.E. machines. Lieuts. Martyn, McLean, Read, and Capts. Harvey and Tucker flew in turn on a M. Farman.

Hendon.—At Grahame-White School, Mr. Birchenough straights with Mr. Manton and later circuits. Mr. Manton on Blériot 2. Mr. Tone Bayetto circuits, later taking brevet in fine style.

At W. H. Ewen School, Mr. Turner test on 35-h.p. Caudron No. 1. Mr. M. Zubiaga passed second half brevet tests, landing on mark. Lieut. Hicks and W. Warren circuits on same. Mr. Turner exhibitions on 60-h.p. Caudron.

At Blériot School, large crowd witnessed christening of 80-h.p. Blériot for New Zealand Government. After ceremony Mr. Hamel took Lord Desboruogh and others for passenger flights. Mr. Slack on No. 5. In evening Mr. Gandillon did first half of brevet at 300 ft.

Brooklands.—At Vickers School, Mr. Barnwell early on biplane (70-h.p. Gnome), with Major Brancker (new pupil), Mr. Knight circuits, Mr. Barnwell with Mr. Mitchell and Mr. Beevor. Too windy for pupils alone. In evening Mr. Barnwell with Capt. Balfour (new pupil) on biplane (70-h.p. Gnome), Mr. Knight testing other biplane, then Mr. Beevor circuits. Mr. Knight testing No. 3 mono,.then Mr. Mitchell straights, Mr. Knight (pupil) with Mr. Knight on biplane. Mr. Waterfall with Capt. Balfour circuits on biplane.

At Bristol School, too gusty in morning for flying. Later Mr. Merriam with Lieut. Noott, Capt. Wilson (new pupil), Messrs. Bernard Howard and Powell (new pupil). Mr. Bendall with Mr. Grahame Harris straights.

At Martinsyde's Mr. Gordon Bell out for an hour and a half passenger-carrying, taking up Mr. F. G. Andreae, Lieut. Blatterwick, and W. E. de B. Whittaker.

Salisbury Plain (Bristol School).—Mr. Pixton early testing, Mr. Adams alone; Mr. Pixton with Major Hewetson and Lieut. Burns. Mr. Garnett taxi-ing on mono. Mr. Busteed with passenger testing tractor biplane. Mr. Busteed out in evening, but weather bad.

FRIDAY, May 23rd.

R.F.C., Central Flying School.—Strong south-west wind. Bright, but cloudy. On M. Farman 418, Lieut. Shepherd 5 mins; Engr.-Lieut. Randall 12 mins. On M. Farman 431, Asst.-Payr. Lidderdale 12 mins; Master Mechanic T. O'Connor 10 mins. On M. Farman 426, Capt. Salmond 6 mins alone, with Lieut. Birch 12 mins, with Lieut. Harvey Kelly 10 mins, with Capt. Fawcett 18 mins; Lieut. Stopford with Capt. Newell 25 mins. Capt. Fox arrived on new B.E. 449 (70-h.p. Renault), from Farnborough. Time, 1 hr 20 mins.

R.F.C., Farnborough.—On M. Farman 305, Capt. Reynolds 10 mins.; Lieut. Holt 55 mins. On Bréguet 210 Major Raleigh 28 mins; Capt. Shepherd 8 mins.

R.F.C., Montrose.—Capt. Longcroft on a B.E. and Capt. Herbert with Capt. Tucker as observer on M. Farman to Barry Camp. Lieut. Joubert local flight on a B.E. Lieuts. Pepper and McLean on M. Farman. Early morning flights by most pilots. Capt. Becke instructing Sergt.-Major Fletcher.

Hendon.—At Grahame-White School, Mr. Birchenough circuits with Inst. Cheeseman. Mr. Power circuits on No. 7 biplane. Mr. Manton circuits on Blériot, and Mr. Carr and Mr. Power circuits on No. 7.

At W. H. Ewen School, M. Baumann test on 35-h.p. Caudron No. 2. Mr. F. W. Goodden half-circuits. Mr. C. George rolling. Mr. Turner test on No. 1 Caudron, and several flights on 35-h.p. Caudron No. 1.

At Blériot School, Capt. Cox straights; improving. Mr. Gandillon tried second half of brevet, but came down.

At Deperdussin School, Col. Smyth and Mr. Jaques rolling.

Brooklands.—At Vickers School, Mr. Knight testing biplane with Mr. Beevor, then Mr. Beevor circuits. Mr. Knight with Capt. Balfour and Major Brancker. Mr. Mitchell alone flight in bumpy weather. In evening Mr. Barnwell test on biplane. Too windy for pupils.

At Bristol School, 4.0 a.m., Mr. Merriam test. Afterwards with Capt. Wilson, Lieut. Noott, Mr. Richard Powell, and Lieut. Morgan. Later Mr. Bendall with Lieut. Noott, and Mr. Merriam with Capt. Wilson, but weather no good.

At Martinsyde's, Mr. Gordon Bell accompanied Mr. Hamel to Ranelagh, taking as passenger Mr. F. G. Andreae. There and back, including three circuits over polo ground in 25 mins, returning at 3,000 ft. Then with Lieut. Harford 10 mins.

Brighton Shoreham.—Mr. Pashley two circuits and found apparent calm very deceptive. Up again, with Mr. E. L. Dower for 15 mins, passing over Bungalow Town. Machine much steadier with passenger.

SATURDAY, May 24th.

R.F.C., Central Flying School.—Strong, gusty south-west wind. Fine, bright and clear. No flying. Lieut. Stopford arrived on B.E. 442 (70-h.p. Renault) from Farnborough in evening. Time, 50 mins.

R.F.C., Farnborough.—Major Raleigh on B.E.; Lieut. Hubbard on Henry Farman; Capt. Reynolds on Maurice Farman, flying past the saluting point on Laffan's Plain at review on the King's Birthday. M. Collardeau testing Bréguet for R.A.F., smashed machine. Pilot and passenger got severe shaking.

R.F.C., Montrose.—Early flights by most pilots. Capt. Becke on "B.E." with Sergt.-Majors Fletcher and Measures for instruction. In forenoon, Capt. Longcroft, Lieuts. Lawrence and Arthur on "B.E." with submarine officers from Dundee as passengers. Capt. Herbert and Lieut. Pepper on M. Farman. In afternoon, Capt. Herbert on M. Farman with M. Farman. In afternoon, Capt. Longcroft on "B.E." Lieut. Lawrence, accompanied Capt. Longcroft on "B.E." with Lieut. McLean to Ladybank. Major Burke arrived at 8.30 from Farnborough on "B.E."

Hendon.—At Grahame-White School, Mr. Power straights on No. 7, under Mr. Manton.

At W. H. Ewen School, Mr. Turner test on 35-h.p. Caudron No. 1. Lieut. W. C. Hicks circuits and Mr. Prosser straights. M. Baumann test on 35-h.p. Caudron No. 2. Mr. F. W. Goodden circuits, Messrs. Pendlebury and Cowling straights and Lieut. Bewes rolling.

At Deperdussin School, Colonel Smyth and Mr. Jaques rolling. Lieut. Porte on 100-h.p. machine and Mr. Brock on 35-h.p. No. 5 machine for speed handicap. Mr. Brock won heat and first in final. Still another tribute to splendid handling of machine.

Twenty-one (21) pilots flying. (See special report.)

Brooklands.—At Vickers School, early Mr. Barnwell on biplane, then with Mr. Beevor. Mr. Orr Paterson on biplane. Mr. Knight testing No. 3 mono. Lieut. Blatherwick straights. Mr. Knight testing other school biplane (70-h.p. Gnome). Mr. Knight with Capt. Balfour; Mr. Mitchell alone. Mr. Andreae and Mr. Mitchell straights on No. 3 mono. Mr. Barnwell with Major Brancker on biplane. Mr. Knight (pupil) with Mr. Knight. Then Mr. Knight alone for first time. Mr. Beevor straights on biplane (70-h.p. Gnome), and made heavy landing on rough ground, damaging machine, but escaping without serious injury himself. In evening Mr. Knight (pilot) testing biplane with Mr. Wright. Mr. Orr Paterson then for brevet, getting it in splendid style, at 600 ft.

At Bristol School, Mr. Merriam first out. Lieut. Duncan with Mr. Merriam. Mr. Bendall with Lieut. Noott, Mr. Richard Powell, Mr. Grahame Harris and Capt. Wilson. Mr. Bendall with Mr. Bernard Howard and Capt. Wilson. Mr. Merriam with Mr. Grahame Harris and Capt. Wilson. Lieut. Duncan alone.

Mr. Gordon Bell with Mr. Trott, foreman at Martin Handasyde Works, to Hendon in 14 mins.

Brighton Shoreham.—Mr. Pashley, with Mr. Dower, circuits in fog. Later with Mr. Geere but machine invisible at 150 ft. and Mr. Pashley completely lost himself till he discovered fence and river on east of aerodrome.

At Avro School, Mr. Raynham on Avro (35-h.p. Green) circuits testing engine. Mr. Gaskell (pupil) straights. Mr. Shaw, of Farnborough, has joined school.

Windermere (Lakes Flying Co.).—Mr. Stanley Adams flew "Water Hen" alone and with passenger. In evening, Mr. Bland (pupil) flew "Water Hen."

Liverpool (Waterloo).—Mr. Melly figures of 8 in two-seater alone at 400 ft.

Cowes.—Sopwith bat-boat flying in good style to Calshot and back, Mr. Hawker piloting.

SUNDAY, May 25th.

Hendon.—At W. H. Ewen School, 6 a.m., Mr. Turner test on 35-h.p. Caudron No. 1. Lieut. W. C. Hicks and W. Warren circuits, Mr. Prosser straights. Mr. Turner with pupil on 60-h.p. Caudron. M. Baumann testing 35-h.p. Caudron No. 2. Mr. Goodden circuits, Messrs. George, Jagenburg and Lieut. Bewes rolling.

In afternoon 14 pilots out. (See special report).

Brooklands.—At Vickers School, in afternoon Mr. Knight testing biplane, then with prospective pupil, and then two flights with passenger, Mr. Waterfall circuits on biplane. Bomb-dropping competition for pupils in afternoon, purely Vickers' affair, no other school entering pupils. Messrs. Blatherwick, Waterfall, Mitchell, Andreae, and Orr Paterson competing. Event won by last-named. Mr. Knight on biplane with passenger, then with Major Brancker. Mr. Waterfall with Mr. A. Knight circuits. Mr. Knight (pupil) more circuits with Pilot Knight. Mr. Orr Paterson circuits with passenger.

At Martinsyde's, in evening Mr. Bell returned from Hendon by circuitous route, with Miss Wheatley. Up alone gave fine exhibition with steep banked turns.

Brighton Shoreham.—At Avro School, Mr. Raynham on Avro in ideal weather. Mr. Rolshoven (pupil) then up, landed badly and broke tractor.

Mr. Pashley to Brighton with Mr. E. L. Dower, of The Aeroplane, who took photographs of town and pier. Return in evening only took ¾ hr. Mr. Eric Pashley then took up Mr. Shaw, of Avro School, and afterwards his brother.

Tabloid "Rytol."

Mr. H. G. Ponting, F.R.G.S., the official photographer of the ill-fated Scott expedition, is a person whose judgment in photographical matters, based as it is upon long experience, carries some weight. It is something of a feather in the cap of Messrs. Burroughs and Welcome that the developer which he chose to take with him upon that occasion was the Tabloid "Rytol" Universal developer. The success which attended its use may be judged by the excellence of those polar photographs which have been published recently.

Hervieu Hangars on Order.

It is satisfactory to learn that the War Office has placed a contract with Messrs. Delacombe and Maréchal, of 166, Piccadilly, for a number of Hervieu transportable tents of different sizes for various types of aeroplanes. It will be remembered that in the official tests at Farnborough one of these tents, big enough to house an ordinary monoplane, was erected in twenty-two minutes by men of the Royal Flying Corps, who had not training for the work, and that a trained crew can put one up in only a little over ten minutes. The tents were not only subjected to the ordinary packing and unpacking tests, but were also exposed in exceedingly bad weather and high winds for several days and stood the strain exceedingly well.

At the time a remark was circulated (possibly from interested quarters) that a Hervieu tent had been blown down while under test. As a matter of fact, what really happened was that one of the struts buckled in a wind which exceeded 70 miles an hour, the tent at that time being on an exposed piece of land, and it is interesting to note that at the same time two of the military sheds similar to those which were erected for the Military Aeroplane Competition on Salisbury Plain were blown down, completely demolishing the machines inside them.

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Special PREPAID Rate—18 words **1 6**; Situations Wanted ONLY—18 words **1/-**. 1d. per word after.



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"HOW TO TAKE OUT PATENTS IN ENGLAND AND ABROAD." (By Arthur E. Edwards, F.C.I.P.A.) 2s. post free.—ARTHUR EDWARDS & CO., LTD., Patent Agents and Consulting Engineers, Chancery Lane Station Chambers, W.C. 'Phone 4536 Holborn.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Rearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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First Night Flying Demonstration of the Season at HENDON To-night

THE EDINBURGH AERONAUTICAL SOCIETY READING ROOM.

THURSDAY, MAY 29th, 1913, at 8.30 p.m.

IN consequence of the enormous success of the displays of Night Flying given at the London Aerodrome last year, it has been decided to make a regular feature of these interesting demonstrations fortnightly throughout the present season.

The first display will take place this evening (Thursday) at 8.30 p.m., weather permitting.

The regular Thursday afternoon exhibitions and passenger-carrying flights will be given during the afternoon from 3 p.m. At 8.30, there will be a parade of illuminated aeroplanes. The machines will be lined up on the course, facing the enclosures, and all their lights will be switched on simultaneously, providing a most striking effect.

Afterwards flights will be made on the illuminated aeroplanes around the course, and amongst the famous pilots who will take part are Claude Grahame-White, Gustav Hamel, Richard T. Gates, Louis Noel, Sydney Pickles, Marcus Manton, Lewis Turner, Jules Nardini, and J. L. Hall.

The flight of an illuminated aeroplane provides a thrilling and novel spectacle. When the pilot switches off the whole of the lights on his machine, the effect produced is weird in the extreme, the aeroplane being quite invisible and only the noise of the engine indicating that the machine is flying. An interesting test then is to speculate on the exact locality of the machine; when the lights are again switched on the position previously decided upon is rarely correct.

A special feature of to-night's display will be the illuminated Willows Airship, which will demonstrate in conjunction with the aeroplanes, whilst powerful naval search-lights will play on the aircraft throughout the manœuvres.

This is the first occasion on which an airship has been used with aeroplanes during a public display of Night Flying, and the sight should certainly not be missed.

At 10.15 p.m. there will be a magnificent display of fireworks, which will include all the latest and most novel effects, the endeavour being to produce as realistically as possible the effect of "War in the Air."

Delivered by W. W. CROUCHER & SONS, from 14 Queensferry Street.

WILBUR WRIGHT
MEMORIAL DAY.
SATURDAY, MAY 31st, 1913.

THE present year is the tenth anniversary of the practical conquest of the air by the aeroplane built by the famous Wright Bros., of America. It is also a year ago this month that Wilbur Wright succumbed to an attack of typhoid fever.

The Directors of the London Aerodrome have therefore arranged for a special Memorial Meeting in order to draw particular attention to the importance of the Wright Bros.' influence upon the development of aviation.

The programme will contain a portrait and special article on the late Wilbur Wright, by Mr. A. E. Berriman, of "Flight," also an illustrated description of the Wright Biplane, by Mr. W. E. de B. Whittaker, of THE AEROPLANE.

In the series of popular Hendon pilots, Mr Grev will describe the career of Louis Noel. Copies of this programme can be obtained from the London Aerodrome Offices, 166, Piccadilly, W., for 3d. post free.

The racing, starting at 3 p.m., weather permitting, includes a Cross-Country Handicap and a Grand Speed Handicap, for which excellent entries have been received.

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SATURDAY, JUNE 7th, 1913.

THIS year the Aerial Derby will be a handicap race in order to equalise the chances of each competitor. The start and finish (undoubtedly the most interesting features of the race) will be at the London Aerodrome, Hendon. At 3 p.m. there will be a grand Speed Handicap round the pylons for a Trophy and money prizes. The limit man in the Aerial Derby will start at 4.15 p.m., and the other competitors will follow according to their respective handicap.

The first, second, and third competitors home will be the winners, and it is expected that the race will provide a very close finish.

The First Prize is the "Daily Mail" Trophy and £250; second, £100; third, £50; and there will be a special prize of £50 for the fastest time.

On this occasion the prices of admission to the Aerodrome will be 1s., 2s. 6d.; special enclosure, 5s.; (Motors, 5s.); Paddock, 10s.; (Motors, 10s.)

We shall be pleased to send a complete list of the splendid series of Meetings arranged for the present season. Drop a post-card to the London Aerodrome Offices, 166, Piccadilly, W.

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THE EDINBURGH AERONAUTICAL SOCIETY

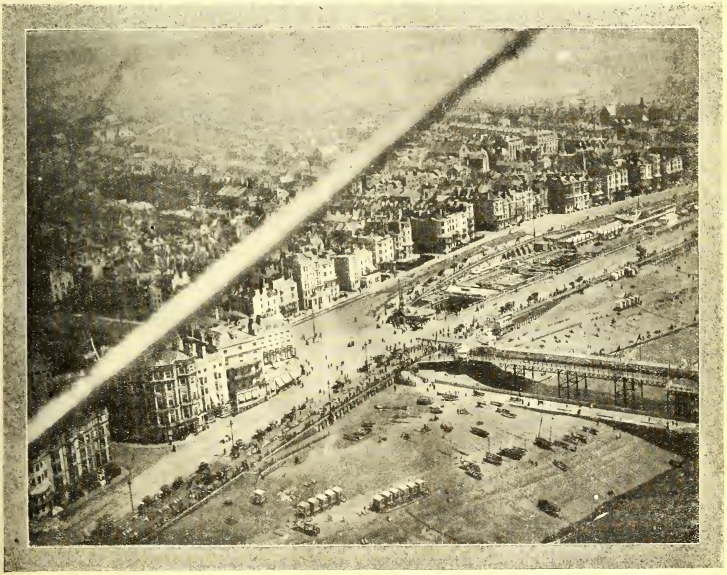
THE AEROPLANE

1d WEEKLY

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VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, JUNE 5, 1913. No. 23.

BRIGHTON FROM ABOVE



The Aquarium and Pier at Brighton. Taken by Mr. E. L. Dower from Mr. Pashley's Bloudeau-Hewlett biplane.

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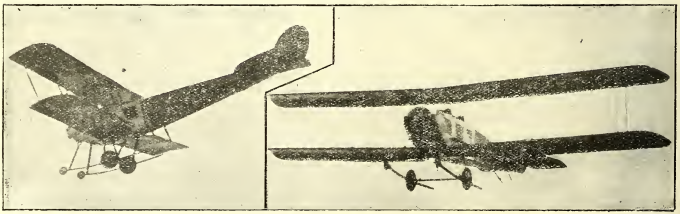
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"The Best in the World."

So the expected has happened. A "B.E." biplane built in the Royal Aircraft Factory has broken in the air and killed its pilot. The accident came as a shock to almost everybody connected with the construction of aeroplanes, for the idea is general that, owing to the amount of money spent in building these machines and the care taken in the selection of material regardless of expense, the "B.E.'s" are, at any rate, safe, even if in other respects they are not so great an advance on all other machines as some would have us believe.

Speaking in the House of Commons, the Secretary of State for War boasted that we have in this country the best aeroplane in the world, the product of the best brains in the country. He referred to these "B.E." biplanes. On various occasions it has been pointed out in this paper that aeroplanes of other makes are aerodynamically as good or even better, and that the general design of the type is made up of ideas collected from other makes, so that on those grounds the claim to pre-eminence was both ridiculous in itself and unfair to independent constructors. But the construction of these machines has never been criticised except on the grounds that owing to the design of the ribs in the wings and the continual warping to which each wing as a whole is subjected, it was probable that the wings would become soft and flabby and refuse to lift properly. Also it has been pointed out that the type at present being ordered from various firms to be built under contract is an obsolete pattern and should not be ordered in quantities.

The safety of the "B.E.'s" has never been questioned in this paper, and that one of them would break in the air was the last thing that I personally expected. Those who did expect the smash were better qualified to judge. That the smash was expected at all is another proof that the claims made on behalf of the "experts" of the Royal Aircraft Factory are not merely preposterous in themselves, but are a standing menace to the aerial defence of this country and to the lives of men who, though they are not the heros of sentimental romance, as a certain politician would have the people believe, are doing their duty as officers and gentlemen in the King's service.

If I write bitterly, I ask that it may be remembered that Desmond Arthur was my very good friend, and that others of my friends who have devoted years of their lives, and such money as they possessed or could obtain, to the production of serviceable aeroplanes, have been so treated by those in authority who believe, or profess to believe, that the best brains in the country are all inside the Royal Aircraft Factory, that the businesses they have founded have been brought almost to ruin. With fair and intelligent treatment several comparatively small firms would by now have been in a flourishing condition, turning out better and safer machines than these "B.E.'s," and this without the granting of subsidies by the Government—a system which is altogether objectionable.

As things now are we find orders for an obsolete type of Government design going to a few big firms, which simply means blocking all progress unless the directors of those firms are sufficiently public spirited to allow their technical staff to spend any profit they make out of "B.E.'s" on experiments with improved designs, with the full knowledge that these improvements will be appropriated by the Government designers and embodied without acknowledgment in the next batch of machines ordered from the first big firm which chooses to tender at a cut price. The killing of one's friend and the boycotting of independent brains which could render good service to the development of the aerial defences of the country is perhaps sufficient excuse for bitterness.

Some Straight Questions.

As to whether the accident was expected or not, I wish to put some straight questions to those in authority.—Was "B.E. 205" on which Mr. Desmond Arthur was killed condemned as unserviceable or dangerous by No. 3 Squadron, to which it previously belonged? Was it returned to Farnborough for inspection, repair, or reconstruction? Was it handed over to No. 2 Squadron without any work being done to it? If any work was done to it, was that work all that was recommended? Was Major Burke, O.C. No. 2 Squadron, allowed to fly the machine unaltered, or practically unaltered, from Farnborough to Montrose? And was the state of the machine suggested by the work recommended such as can reasonably be assumed as a likely cause of the accident which killed Desmond Arthur?

Unless those questions can be answered satisfactorily, it is the duty of the War Office to state publicly who was responsible for the use of the machine in such a state after it had been condemned, and to make an example of the culprit. If the statements on which these questions are based are false, they should be officially denied, and the denial should be accompanied by an explanation of any circumstances which could give rise to such statements. Further I may say that the alleged facts, which I have no reason to doubt, are common property, and came out in the course of ordinary conversation with people who are not connected with the Royal Flying Corps.

Forewarned.

As I have already stated, I had no reason to doubt the safety of the "B.E." type of machine till, strangely enough, only a few days before Desmond Arthur's death I happened to meet one of the few men who are at once theoretical and practical, and who can be considered fairly accurate in their calculations. His first words as we met were: "I've just seen the inside of a 'B.E.' wing, and it scares me cold." I thought at first that he merely referred to the weak ribs, but he told me that he had been working out the strains on the rear spars, and said that he was doubtful whether they would stand the same tests as those to which the Royal Aircraft Factory subjects machines of other makes; also that if they did stand up they would have no margin of safety left. He is a man who has no animosity against the R.A.F., and merely worked on what he saw, so his views are worthy of more attention than those of most other people. His figures, if published, would be of little general interest, and his conclusions

are at worst no less likely to be correct than those of the officials who are interested in making the best possible case for the "B.E.'s."

Danger Points.

Hitherto criticism of "B.E." design in detail has been avoided in this paper, partly because the machine has been generally accepted as safe, and partly because anything I said against it would be discounted by the idea that personal bias influenced the criticism, but the time has now come when the danger points in the design must be pointed out.

The efficiency of the machine is not questioned, but it must be remembered that other machines have done as well and better, and that its efficiency is due to two things, firstly the reduction of head-resistance, and secondly, the reduction of weight. In effecting these reductions the design has been brought perilously near the danger point.

When one begins to criticise the "B.E." it is necessary to remember that although the machine is a biplane, in that it has upper and lower planes, it is not cross-braced like an ordinary biplane of the Farman type, and does not form a box girder. To all intents and purposes it is a monoplane, for the lower rear spar is not braced by wires in any way. The load on this spar is transferred through the upright struts or stanchions to the upper spar, which thus takes the whole load just as a monoplane spar does, and takes it all through the warp wires. Now these stanchions are perilously light and have hardly any lateral strength. Moreover, when some of these machines are flying one can see them whipping in a most alarming way. Thus, one need not be much of a mechanic to see that when a wing is suddenly given full warp by the pull of the warp wire acting on the upper spar and when that sudden pull has to be conveyed to the lower spar by a downward endwise push on these flimsy vibrating stanchions there is every reason to expect one to buckle. If it buckles or breaks there is nothing whatever to hold the lower spar, in which case the other of the two stanchions—there are only two on each spar—would certainly break also, and the trailing edge of the wing would fold up with the rear spar. These struts might stand any loading test the Royal Aircraft Factory cared to put on the wings in the way of a carefully deposited sand load, but that does not mean that they would stand up to the sudden impact of a heavy gust coming at the same time as a full warp when they were vibrating while flying.

[Colonel Seely's reply to Mr. Harcourt, under the heading "Questions in the House" was given after these notes were in type, and it will be seen that it admits of this progressive break up of a badly-designed wing.—C. G. G.]

Another point of design which makes matters worse is that the whole rear spar moves right from the fuselage when the wing is warped, so that the spar is under a twisting strain at the same time that the extra load caused by warping comes on. In the Avro and Sopwith tractors only the outer section of the wing is warped, and the inner half next the fuselage is wired up into a proper box girder so that but little load is carried on the actual warp wires. In the latest Sopwiths the whole wing is built rigid and balanced ailerons are used, which not only makes the machine quicker on her lateral controls, but makes a much stronger job all round.

In the latest Bristol tractor biplanes, which are particularly strongly built, the warp wires are led along the front spars and pull the rear spar up from the top of a front stanchion to the bottom of a rear stanchion and down from the bottom of a front stanchion to the top of a rear stanchion, while all the load is carried on heavy cables running under pulleys underneath the fuselage to the upper rear spars. In these and in the Sopwith machines the stanchions are stout and stiff, so that they do not whip appreciably when flying and would stand a much bigger end thrust than the "B.E." stanchions could hold.

To make matters worse, in some of the "B.E.'s" which I have seen, the wires, which are at once load wires and warp wires, are carried to the warp lever over pulleys which are held in small brackets stuck on the front of an upright in the fuselage. These brackets are secured by a couple of little bolts simply passed through holes in the upright—not even clamped round it—and it they gave way the whole wing would be bound to collapse owing to the slacking out of the warp wires. So long as the bracket, and the bolts, and the wood in the upright are reliable all is well, but the risk of any one of the three giving way is too great to give one much confidence in the arrangement, as there is no "stand by" of any kind. There is not much use in duplicating the cables if the load they carry depends on any one of three fixings each of which appears weaker than the cable itself.

When one comes to look at the stanchions, the design of the ribs, the way the weight is carried on the warp wires and rear spars, and the fixing of the bracket which takes the weight on the warp wires one is only surprised that Mr. Arthur's death is the first that is due to "B.E.s" breaking. And incidentally, I hear that No. 205 is not the only "B.E." built by the Royal Aircraft Factory which has broken in the air, though I gather that the other breakage occurred near the ground and no one was injured.

Yet the people who are responsible for the design of these machines arrogate to themselves the position of the Chosen People among aeroplane constructors. They have their excellencies announced by a Minister of the Crown. And they use their powers to have a ban placed on all monoplanes by this same Minister, though their own machine is nothing but a bad monoplane so far as its bracing is concerned, plus the addition of a lower plane, which, as I have shown, is obviously a likely source of danger, but adds to the apparent efficiency of their design by giving more surface for very little extra weight. It will be interesting to see whether a ban is immediately put on "B.E.s" as the result of this accident.

Unfitness for Use.

There is yet another point to which official and public attention should be drawn. As a British taxpayer who takes an interest in national defence, I paid a visit to Salisbury Plain last week, and there saw sundry officers of the R.F.C. flying "B.E.'s" Nos. 203 and 204. In both these machines, but notably in 204, the fabric is old and in places looks as if one could put one's finger through it. The fuselage covering is simply a bag which flaps when the engine is running, and I notice that holes have been cut in it, presumably with the idea of preventing the bag from bursting by letting out the air which enters round the cock-pit where the crew are placed. Even now it would take very little in the way of a gust or a dive to rip this covering off and wrap it round the tail, where it would probably jamb and lock the elevator and rudder controls. In such a bad state are both these machines that they would be dangerous to fly under any circumstances. With 80-h.p. engines and flying in such winds as they are flown in, I believe it to be criminal to permit their use.

The fatal accident to Mr. Rogers-Harrison, after which the official report is published in this issue, should have been sufficient warning to officialdom that more attention should be paid to the care of machines. If the officials at the Royal Aircraft Factory had been worth their salt as practical men they would have seen that the fabric on the Cody machine was old and perished when they were called upon to accept it for the R.F.C. With their alleged high scientific attainments it should have been an easy matter for them to discover such a fault, when a rule-of-thumb genius like Mr. Cody overlooked it. One can only assume either that they knew of the defect and wickedly let it pass.

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or else that these finicking inspectors, who have needlessly delayed the delivery even of "B.E.s" built by independent constructors, are utterly unfit to tell a good machine from a bad one, except when judged with a slide rule, a pair of calipers, sundry chemical analyses, and reams of paper.

After these latest experiences one fancies most people, including the pilots of the Royal Flying Corps, will prefer to trust their lives to machines built according to their "eyeableness" by men with real practical experience.

It is time this official belief in the infallibility of the R.A.F. pseudo-scientists was destroyed, and these two fatal accidents ought to go far to accomplish that end. I am fully aware that I shall be accused of using dead men's coffins as weapons in a personal squabble, but I believe the end justifies the means. At any rate, let us hear no more about the "best aeroplane in the world" and "the best brains in the country." If the self-elected Chosen People of the Royal Aircraft Factory can be prevented from slaying the harmless and necessary Philistine aeroplane constructor with the jawbone of a political ass, some good purpose will have been served.—C. G. G.

Report on the Fatal Accident to Lieut. L. C. Rogers-Harrison.

The following report has been issued by the Public Safety and Accidents Investment Committee of the Royal Aero Club on the above accident:—

Lieut. L. C. Rogers-Harrison, flying a Cody biplane, fitted with a 120-h.p. Austro-Daimler motor, on Monday, April 28th, 1913, at about 6 a.m., left the Flying Ground at Farnborough for an ordinary practice flight. After being in the air for about twenty minutes, during which time he had made a complete circuit in the neighbourhood of the flying ground and had attained a height of about 1,200 feet, he was observed to be coming down, as if to alight up wind, in accordance with orders, on the flying ground. At about 500 feet the aircraft was observed to be descending more steeply. The aircraft collapsed, and fell to the ground, killing the aviator instantly. The aircraft was completely wrecked and several parts were picked up in adjacent fields.

The representatives of the Accidents Committee went to Farnborough and visited the scene of the accident within a few hours of its occurrence, and took evidence from the eye-witnesses.

The Committee sat on Monday May 5th, 1913, and on Monday, May 19th, 1913, and received the report of the Club's representatives, who were on the spot within a few hours of the occurrence. This report included the evidence of eye-witnesses. Mr. S. F. Cody, the designer and manufacturer of the aircraft, attended and gave evidence on various points raised by the Committee.

From the consideration of the evidence, the Committee regards the following facts as clearly established:—

(1) The aircraft was built in June, 1911, and took part in the Military Aeroplane Trials in August last, winning the first prize of £5,000, and was subsequently purchased by the War Department without any further tests.

(2) Since that time certain alterations had been made to it:—

All the wiring of the wings had been renewed on the occasion of the altering of the dihedral angle from the negative to the positive, which was done within about three weeks of the accident.

The aircraft was subsequently tested in flight by Mr. S. F. Cody on several occasions shortly before the accident.

(3) The elevator had not been re-covered since July 1911.

(4) At the time of the accident the wind was about 10 to 12 m.p.h. on the ground and was somewhat gusty.

(5) The aircraft at the time of the accident was descending at an angle which was not unusually steep. The evidence is inconclusive as to whether the engine was throttled down.

(6) When about 500 feet from the ground the elevator and wings failed and the aircraft fell to the ground. Pieces of the elevator, wing fabric and struts were picked up some distance from the place where the aircraft fell and in such a position that they must have fallen from the aircraft whilst still in the air

(7) The fabric with which the wings and elevator were covered was weak.

(8) The elevator was a pivated one, the pivot being approximately a third of its width measured from the leading edge, and coincident with the axis of the front spar.

Opinion.—The Committee is of opinion that the aircraft had structurally deteriorated from one cause or another since it was originally built in 1911, and that in condition at the time of the flight was precarious.

The elevator was not designed with a view to the withstanding of top-pressure and the appearance of the fractures indicates that it failed from this cause. Mr. S. F. Cody's opinion as to the failure of the elevator coincides with that of the Committee.

Recommendation.—In view of the fact that aircraft are built of perishable materials, the Committee strongly recommends that those which have been in existence for some time, whether they have been in use or not, should undergo a critical examination both as regards their framework and the fabric with a view to ascertaining to what extent deterioration has taken place, and the condition of the aircraft generally recorded at the time.

The failure of the elevator in this case points to the necessity for making any such part adequate to withstand top-pressure. Moreover, the re-action on the pilot from the elevator must always be within the pilot's easy control.

The Trials of the New Avro.

The Avro 100-h.p. Gnome hydro-aeroplane was flown successfully from the river outside the Shoreham Aerodrome on Wednesday last, piloted by Mr. Raynham. The length of water between the bridges is 1,300 yards. A start was made a little past half-way, and the machine rose at the first attempt in 10 secs., with passenger, anchor, and two hours' fuel, clearing the railway bridge by a good 100 ft. Owing to a sea mist it was impossible to fly at more than 300 ft. Two flights of 10 and 15 mins. were made, the machine showing an exceptionally low landing speed

The next day Mr. Raynham flew to Brighton with Mr. Alcock as passenger, arriving at 2,000 ft. and alighting perfectly after many spirals outside the Messrs. Volk's shed, where the machine was anchored without assistance. After a stop to take on board many gallons of castor oil, a start was made, again without assistance; and after both piers and a steamer had received suitable attention at close quarters, a return was made at 1,500 ft.

Flying was finally stopped for the day by a damaged float. On beaching the machine it was found that the bottom of the front watertight compartment had started to give way outwards, apparently due to the suction in getting off

A Good Cross-Country Flight.

As this paper goes to press the information has arrived that Mr. Gordon Bell, flying on the Martinsyde monoplane (120-h.p. Austro-Daimler) with Mr. F. G. Andreae as passenger, travelled from Brooklands to Eastchurch in forty-four minutes on Tuesday morning. Distance, approximately, 60 miles.

A New Book.

Messrs. Constable have ready for immediate publication an important work on aviation entitled "Air Resistance and Aviation." This book is from the French of M. G. Eiffel, who owns the famous experimental laboratory at Auteuil, near Paris. A very large number of diagrams and plates, several photographs, and numerous tables of figures give graphic vigour to this authoritative book. The translation is the work of Mr. J. C. Hunsaker of the U.S. Navy Yard, Boston, himself an authority on aviation, and the volume, which discusses the very latest models and research, will be widely appreciated.



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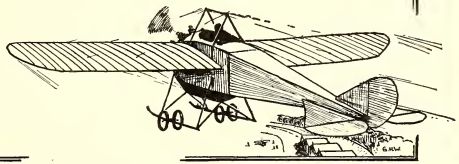
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BY W. E. de B. WHITTAKER.

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England, my England:
You with worlds to watch and ward,
England, my own!
You whose mail'd hand keeps the keys
Of such teeming destinies,
You could know nor dread nor ease
Were the song on your bugles blown,
England,
Round the Pit on your bugles blown!

W. E. Henley.

It is the bounden duty of all Governments to produce legislative enactments for the maintenance of proper order in the life of the community. The safety of the Realm and the King's subjects demands their urgent care and the happiness of the individual must be subordinated to the common weal. The stranger within our gates has of right that courteous treatment one extends to one's guests. The family silver may be guarded but the wardens are unostentatious and their purpose disguised. Such is the ideal personal and political practice. But the ideal and the real are not the same in this vale of tears. They are not meant to be and they cannot be. The real at the same time should be a reasoned attempt to attain the ideal.

Children play in the Land of Make-Believe, men live in it. That is the only difference. But there is no reason why the make-believe should be ridiculous. In its proper form it is an attempt to preserve the amenities of life which a too strict adherence to realities would prevent. Make-believe to be effective must be played by all parties. There must be no cynics in the game. Therefore, one must not start a game of make-believe without ensuring that everybody else is going to play.

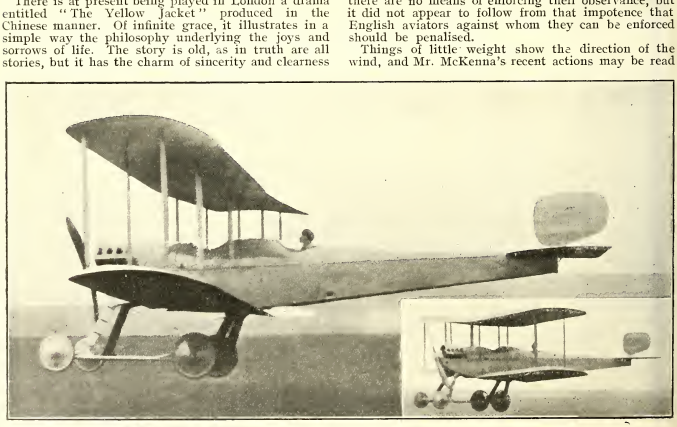
There is at present being played in London a drama entitled "The Yellow Jacket" produced in the Chinese manner. Of infinite grace, it illustrates in a simple way the philosophy underlying the joys and sorrows of life. The story is old, as in truth are all stories, but it has the charm of sincerity and clearness of presentment. The Chinese, deep in the wisdom of the ages, pay no attention to the mechanical side of stagecraft, and the stage properties are few and simple. A perilous heap of chairs represents a mountain, and a torrent which has to be crossed exists only in the imagination. With the gravity of children the actors play their parts by pure art and without the disguise and assistance of scenery.

In one scene a farmhouse is understood to be on the stage. The walls are invisible to the physical sight and the door is represented by a feather brush in the extended hand of the Property Man, who is presumed to be equally invisible to the august audience.

In the view of Mr. William Shakespeare the world is merely a stage larger perhaps than any other, but still a place on which mortal man plays his part in the drama of life. Let us suppose Great Britain to be the farmhouse spoken of above. It is not then difficult to see in the Aerial Navigation Act the feather brush in the hand of the Property Man. And the protection afforded by this make-believe would be effective if the other nations in the world would play. But, grossly material as they are, the barrier is invisible to them mentally as well as physically. And so the game languishes because the actors will not all play.

When the Regulations appeared under the authority of the Home Secretary the majority of people regarded them as an excellent attempt to warn Foreign Powers that they must not make mistakes and not as a Machiavellian method of discouraging aeronautics as a sport, a science, or an industry. It was not understood that a weapon designed for use against enemies was to be turned into a tribulation for our own people. The Regulations can be defied by foreigners because there are no means of enforcing their observance, but it did not appear to follow from that impotence that English aviators against whom they can be enforced should be penalised.

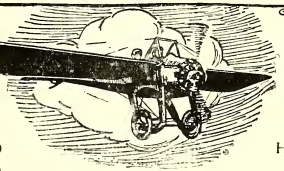
Things of little weight show the direction of the wind, and Mr. McKenna's recent actions may be read



Mr. Burleed starting and landing on the latest type Bristol biplane at Lark Hill.

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into a declaration of his intentions. Perhaps it is not even Mr. McKenna. The Committee of Imperial Defence may have taken fright. But however august may be the perpetrators of the mistake they are none the less ridiculous.

There is a small and usually blameless section of the community which takes a large delight in ballooning. The sport is innocent enough despite the dreadful destruction of hot-houses and tree-tops. The safety of the nation is not at the mercy of the balloonist. Yet the Secretary of the Royal Aero Club received notice that all competitors in the balloon race starting from Hurlingham on Saturday last must land at once and report to the police if inadvertently they passed over a prohibited area.

The promoters of the Aerial Derby have also been informed officially that no exemptions will be issued to competitors in that aeroplane race, as the course round London involves a passage over portions of the prohibited areas at Purfleet and Enfield Lock. The Thames may not be flown across from Barking Creek to Sheerness. These may be small matters to the world at large, but great principles underlie them. A little thought will show that a rigid enforcement of the aerial Regulations can and will be a serious setback for the industry.

The Home Office has laid it down that British subjects are not to have, by right of their birth, any advantages denied to the foreigner. The Home Secretary will be as ready to refuse or grant exemption to pass over Woolwich Arsenal to a German as to a Briton. He is impartial in his imputations of honesty or dishonesty.

There is to be a considerable industry in the manufacture of hydro-aeroplanes owing chiefly to the requirements of the Navy. There are few places really suitable for experiment in these craft of two elements. Chief among these places is Southampton Water and the Solent. Yet, it is impossible to fly over the waters in this district without breaking the law. Mr. T. O. M. Sopwith and Mr. Howard Wright are both engaged on aeroplane trials near Southampton. Are they to be permitted to continue? Probably they are, as they are building aeroplanes with a view to selling them to the Government. Why, then, should a sporting event be suppressed? That also is helping the industry and providing money for further developments which cannot but be advantageous to His Majesty's Government in the end. The Thames is under an equal bar.

A further absurdity lies in the fact that the authorities do not readily give exemptions to officers on the active list when those officers are flying privately-owned machines.

In spite of these ill-advised attempts at repression, attempts which will be only too successful, a foreign dirigible could with the greatest ease fly over the country without interference. Aeroplanes have on occasion broken the law without discovery. There are several cases well known amongst people intimately connected with aerial matters.

Some form of Regulations are absolutely necessary. Of that there is no question. But they can at least be carried out in a sensible manner. The present method of procedure neither induces respect for the Government nor adds to national security.

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty appointments, May 27th:—

Lieutenants—Richard B. Davies to the "Actæon," additional, as flying officer for Naval Flying School, to date April 17th; Spenser D. A. Grey to the "Actæon," additional, as Squadron Commander and for command of Calshot Naval Air Station, May 1st, and to the "Hermes," additional, as Squadron Commander, and for command of Calshot Naval Air Station, to date May 7th.

Admiralty appointments, May 28th:—

Lieutenant—Cecil J. L'Estrange Malone, graded as Squadron Commander, to date May 1st.

On the occasion of his Majesty's birthday the King has been graciously pleased to approve of the following officers being promoted by brevet for services in connection with the Military Wing, Royal Flying Corps. Dated June 3rd, 1913:—

To be Majors:

Captain (temporary Major) Frederick H. Sykes, 15th (The King's) Hussars, commanding the Military Wing.

Captain (temporary Major) Henry R. M. Brooke-Popham, the Oxfordshire and Buckinghamshire Light Infantry, a Squadron Commander.

Captain (temporary Major) Charles J. Burke, the Royal Irish Regiment, a Squadron Commander.

To be noted for promotion to Brevet Major on attaining the rank of Captain:

Lieutenant Basil H. Barrington-Kennett, Grenadier Guards, Adjutant, Military Wing.

Lieutenant (temporary Captain) Herbert R. P. Reynolds, Royal Engineers, a Flight Commander.

To be a Companion of the Most Honourable Order of the Bath:

Mervyn O'Gorman, Esquire, Superintendent of the Royal Aircraft Factory.

During H.M. the King's visit to Berlin, Vice-Admiral Sir John Jellicoe, Second Sea Lord, made a passenger flight on the Zeppelin dirigible "Hansa."

Lieut. C. E. H. Rathborne, R.M.L.I., Naval Air Service, flew from Eastchurch to Dead in 40 mins. on a biplane on May 28th.

A flight of No. 3 Squadron, Royal Flying Corps (Military Wing), is to be stationed at Lydd from June 13th to July 27th for observation purposes in connection with heavy gun firing by siege artillery.

The wreckage of the B.E. machine which killed Lieut. Arthur was inspected on Wednesday, May 28th, by Major Sykes, Commandant, Royal Flying Corps, who spent a long time making a minute examination of the various parts. The next day (Thursday) it was also submitted to a close examination by Mr. Perrin and Mr. Manning, of the Royal Aero Club.

The remains of Lieut. Desmond Arthur were interred at Sleepyhillock Cemetery, Montrose, on Thursday, May 29th. The whole squadron turned out to follow the remains to the grave. Service was conducted at St. Mary's Church by the Rev. F. L. Guerlitz, who also conducted the gravehead service.

FRANCE.

On May 22nd Sergeant-aviator Caron, attached to the aviation centre at Belfort, flew on a Blériot monoplane to the summit of the Ballon d'Alsace, where he landed despite the bad state of the ground. This plateau is 4,000 ft. above sea-level.

An escadrille composed entirely of Voisin biplanes and piloted by Lieutenants Guichard and Cauttison, Sergeants Grasset and Peyrat, and Corporals Laporte and Mahieu, left Chalons on May 23rd and flew along the eastern frontier, calling at Toul and Nancy. At several points of their voyage they flew through hail and rain.

The military centre at Lyon is rapidly arriving at a state of efficiency. Three Bessoneau hangars are in course of erection, whilst two Farcot hangars are in constant use. Captain-aviator Fiorellino is in command. The machines in use are Henry and Maurice Farman biplanes. Lieuts. Mouchard and Gignoux have recently returned after having made a circuit of Lyon, Chalons-sur-Saone, Auxerre, Bue, Orleans, Vichy.

Lieut.-aviator Morel, flying a Bathiat-Sanchez monoplane (50-h.p. Gnome), left Mourmelon le Grand on May 25th, at 5.30 a.m., and reached the Camp de Mailly at 6 a.m. The following day he left the Camp de Mailly at 6.15 a.m. and, after passing Vitry le François, reached Mourmelon at 7 p.m.

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An official landing ground is to be opened at Chalons-sur-Saone on the plain of Sainte Marie.

The town of Tunis, impressed by the address and courage of the officers and men who recently made a flight "en escadrille" from Tunis to Biskra and back, has presented each pilot with a souvenir. These souvenirs take the form of silver or bronze statuettes. In subject they range from a Roman warrior to an elephant. How the donors differentiated between the recipients of the warrior and of the elephant is not officially stated.

Escadrille No. 7 at Sissonne, under Lieutenant-aviator de Gensac, has of recent days carried out a series of reconnaissance flights over the surrounding country. The aeroplanes employed are Henry Farman biplanes.

Captain-aviator Casse, O.C. Pau centre, accompanied by Lieutenants Brule and des Hautschamps, all flying Blériot monoplanes, flew on May 27th from Pau to Pontoux and Tarbes and back to Pau, a distance of 125 miles. The journey was without incident.

Lieutenant-aviator de Malherbe, also of the same centre, has recently been making experiments in photography from a Blériot monoplane.

On May 27th Lieutenant-aviator Redelsperger, 13th Dragoons, flew from Reims to Melun on a Deperdussin monoplane with the intention of visiting his regiment. Unfortunately, he landed in a cornfield and overturned, wrecking his machine, but escaping injury himself.

Captain Barés and Lieutenant Mauger de Varennes, both flying Maurice Farman biplanes, left Buc on May 28th, at 5.15 p.m., and reached le Havre at 9.15 p.m., having passed over Rouen. The machines were left in the open all night despite the pouring rain. The next day Captain Barés took the military governor for a flight over the surrounding country. At 5.10 p.m. the two officer-aviators left le Havre and reached Buc at 6.40 p.m. The average height of the journey was 4,000 feet.

The navy took delivery last week of a new Bréguet hydro-aeroplane at Saint Raphael. This machine, with 300 kilos useful load, rose 1,600 feet in five minutes.

An official landing ground is to be opened at Chatillon-sur-Seine.

On May 28th M. Bernard took a Maurice Farman biplane (Canton-Unne motor) through its reception trials at Chalais Meudon for the Army. It rose to 1,800 feet fully loaded in five minutes.

Escadrille No. 5, stationed normally at Epinal, has returned to its base after an absence dating from April 23rd. The escadrille is of Maurice Farman biplanes and the pilots are Captain de Saint-Quentin, Lieutenants d'Abrantes, Battini, Bordes, and Grezeaud, Master-at-Arms Quennehen, Sapper d'Autroches. This escadrille reached Epinal on its return in the evening of May 28th. It has spent the last month at Chalons, carrying out experiments in controlling gun-fire. During this period the escadrille has flown over 9,000 miles in 200 hours.

An Hanriot-Ponnier monoplane was taken through its reception tests for the Army by M. Bielovucic at Bouy. With a useful load of 160 kilos it rose to 1,800 feet in six minutes. The engine fitted was a 60-h.p. Clerget. Captain Francezon is to fly the machine on service.

The town of Tunis has subscribed nearly £3,000 for military aviation and this sum has been presented to the Ministry of War.—W.

GERMANY.

The Schütte-Lanz firm is at present constructing a rigid dirigible of larger size than even the latest Zeppelin and of greater speed. Four motors of 200-h.p. each are to be fitted and will drive eight propellers. There will be five nacelles under the balloon.—W.

On his journey from Strassburg to Gotha, Sergeant Steindorf, Strassburg military station, landed on the Darmstadt ground in a glide from 1,200 metres (4,000 feet) with a throttled motor. Steindorf, who was accompanied by another N.C.O., was the first pilot of non-commissioned rank in Germany to receive the military aviation badge, and when the Emperor inspected the Strassburg troops early in May he conversed with Steindorf.

Dietrich, who was Captain Jucker's passenger at the time of the fatal accident at Johannisthal when two aeroplanes collided with each other, died on May 25th, after lingering for ten days.—B.

BELGIUM.

The Brasschaet military aerodrome continues to be as busy as ever. The Belgian Flying Corps may be small, but it is at least enthusiastic and efficient. Lieutenant Stellingwerth carried out on May 27th a series of experiments in firing a



Mr. Pizey flying the Bristol "Sociable" monoplane at Lark Hill.

M & W



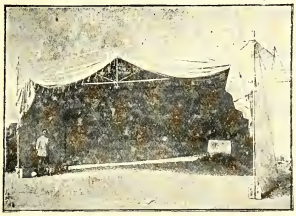
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mitrailleuse from a Henry Farman biplane. A target of ten by eight metres was marked on the ground, and Lieutenant Lebon, who was acting as pilot, rose to a height of 1,200 feet at a point horizontally a kilometre from the target. Twenty per cent. of his shots struck the target and fifty per cent. hit the ground within ten feet of the outer line. The mitrailleuse employed fired 500 shots a minute.—W.

HOLLAND.

The Dutch commission at present visiting the different military aerodromes of France made a close inspection of the Hanriot-Ponnier works at Reims last week.—W.

SPAIN.

Six Maurice Farman biplanes have been purchased by the Ministry of War and have arrived at the aerodrome of Quatro-Vientos, near Madrid.

About ten days ago M. Bonnier took six Nieuport monoplanes (80-h.p. Gnome) through their tests for the Army at Quatro-Vientos.—W.

ROUMANIA.

The Roumanian Parliament has passed an Act forming a military aviation corps and laying down special terms for military aviators. The proposer of the Bill was Prince Cantacuzène, well known in this country as a pilot of the Bristol monoplane (80-h.p. Gnome).

At the central school of military aviation there are to be thirty pupils (twenty officers ,ten rank and file). The machines employed are Bristol monoplanes (80 and 50 h.p. Gnomes), Deperdussin and Nieuport monoplanes, and Henry Farman biplanes. At the school practical flying lessons are given twice daily if the weather is favourable. In the intervals there is a course of practical and scientific training. This school is stationed at Cotroceni, near Bucarest. On the other side of the capital the Ligue Aérienne has its aerodrome from whence excellent flights are made from day to day.

Almost daily flights are made over the capital. On April 18th Prince Cantacuzène flew across at a height of 7,000 feet on a Bristol monoplane (80-h.p. Gnome).—C.

FOREIGN NOTES.

France.

Madame de la Roche, the one-time Voisin pilot, is progressing rapidly at Buc with her training on a Henry-Farman biplane. Of recent days she has made several cross-country flights at a height in excess of 300 feet. Towards the end of last week she was reported to have had a serious motor accident in Versailles. If so, it is clear that the Fates are exceptionally unkind to her, for two flying accidents and two motoring accidents in four years are more than can normally be expected by the average woman.

On May 24th M. Gilbert, who is a native of Brioude, about thirty miles from Clermont-Ferrand, made several exhibition flights on a Henry Farman biplane (80-h.p. Gnome) to amuse the inhabitants of his native place, returning to Clermont later in the day.

A Maurice Farman biplane has recently been fitted with an eight-cylinder water-cooled de Dion motor. So far as one can gather it has been highly satisfactory and several long cross-country flights have been made on this machine by the Marquis de Lareinty Tholozan.

M. Jules Vedrines has left for Algeria by the usual methods of travel that he may illustrate the principles of practical flying to the aborigines of that neighbourhood. He has ordered a second Morane-Saulnier monoplane to be built for him. A nine-cylinder 160-h.p. Gnome is to be fitted.

Mr. Corbett Wilson left Lausanne on his Blériot monoplane with his mechanic as passenger shortly after five o'clock on May 31st. His intention, it is stated, was to fly to England. Nothing was heard as to his whereabouts up to Monday evening.—W.

Germany.

The Johannisthal aviation week began on May 25th in gusty weather, which prevented much flying on the opening day. The longest flight without a passenger was Schiedeck's—1 hr. 19 mins.; with one, Linnekogel's—1 hr. 11 mins. The second day saw several minor accidents, chiefly caused by the terrific dust whirled up on the ground. Roth, the Harlan pilot, who had been caught in a shower of rain, smashed up in landing as the dust blinded his damp goggles. The machine was completely smashed, but both Roth and his passenger escaped with slight injuries. Linnekogel, Stiploschek, Stiefvater, and Michaelis went for the altitude passenger event, Michaelis (Etrich Dove) winning with 1,700 metres. Unfortunately, he came to grief in the early hours of May 27th during a practice flight. Rounding a pylon too sharply, he sideslipped to the ground. He was taken to hospital in an unconscious condition, having suffered several fractures, but late at night the doctors issued a satisfactory bulletin.

In the afternoon the first real race took place in Germany, three monoplanes, not exceeding 80 h.p., simultaneously leaving the mark for a 20-kilometre event out and home. Laitsch (60-h.p. L.V.G.) was first in 12 mins. 56 4-5 secs; Schwandt (45-h.p. Grade) second, and Hanuschke (50-h.p. Hanuschke) third, but as Schwandt had not kept higher than the 200 metres limit the second prize went to Hanuschke.

On May 28th Linnekogel put up a new German altitude passenger record with 2,750 metres (about 9,000 ft). Linnekogel, whose name must be noted in future, steered a 95-h.p. Rumpler Dove (Mercédès motor) fully loaded as in war time. The former German best was Hirth's 2,604 metres, the world's record being held by Lieutenant von Blaschke, Austrian army, with 4,360 metres (14,300 ft.). Linnekogel and Wieting, also a Rumpler pilot, carried off the duration event, dead heating with 2 hrs. 13 mins., whilst Stiploschek's Jeannin-Steeldove was just a minute less aloft.

A new aviation and motor-car company is to be formed at Berlin and near Essen with a capital of about 6,000,000 marks. The committee consists, among others, of Prince Sayn-Wittjenstein, Count Posadowski, Major von Parsival, Lieut.-General von Sieber. The firm will build not only aeroplanes and motor vehicles, but a special type of vehicle for field artillery purposes as well.

The loss of life in Germany is appalling, for hardly a week passes at present without some sad news. On the 28th ult. Albin Horn, of Hanover, was killed during a cross-country flight, when his machine, a 100-h.p. Jatho monoplane, turned turtle in landing. Horn was a married man and leaves a widow and four small children.

Count Zeppelin and the "Sachsen" are due in Vienna some time in June. Should the weather permit, the Zeppelin leaves Baden-Baden on June 9th, otherwise on June 22nd, owing to Emperor Francis Joseph's present arrangements. From Vienna the Count intends to steer to Berlin and then on to Liepzig, its future home.—B.

Italy.

Great things have been doing lately in Italy. On May 27th two aviators, both on Italian machines, have flown from Milan to Rome with a mechanic as passenger and without a stop, but on different routes.

The first, the Frenchman Deroy, on a S.I.A. mono (Società Italiana Aviasione), started from Taliedo at 4.28 a.m. and, following the route Parma, Bologna, Pass of the Apennines, Florence, Arezzo, Chensi, arrived in Rome at 10.35, taking 6 hrs. 7 mins.

The other, an Italian, Cevasco, on a Gabardini mono, started at the same time from the Piazza d'Armi (exercising place) and, following the route through Genoa, passing the Apennines at Giovi, Spezia, Pisa, Civitavecchia, and arriving at Rome just after mid-day. His late arriving is due to not having been able to see the landing place at Centocelle, and having afterwards lost his way. He kept in the air, however, for more than an hour and a half until he found the landing spot.

A great achievement was done by Perreyon, who, with his mechanic as passenger, flew from Turin to Rome and back in 13 hrs. 1 min. 12 secs. (1,400 kilometres) on a S.I.T. (Società Italiana Turin, holders of the Blériot patents in Italy). He started from the Turin Aerodrome at Mirafiori at 4.36 a.m. and, passing over Genoa, Spezia, arrived at Pisa at 8.5 to replenish supply of petrol, restarted from Pisa at 8.55, arrived at Rome at 11.32. His flying time from Turin to Rome was 5 hrs. 46 mins. 12 secs. He left Rome at 1.7 p.m., arrived at Pisa at 4.10, left 4.45. After passing over Spezia he was caught in the clouds, and this made him lose by a little his direction, and therefore had to land at 7.30 at Morano on the

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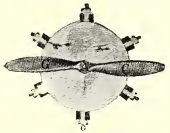
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Po to ask his way, and, restarting directly afterwards, landed at Mirafiori at 8.57 in the dark

During these days the Italian, De Dominicis, is trying to beat Perreyon's time, which will be rather difficult on the Italian mono Vandome, with a 50 h.p. L.U.C.T.—Mario Ariolli.

Cuba.

The successful flight of Senor Domingo Rosillo across the 90 miles of water that separate Key West (Florida) from Havana (Cuba) is being emphasised in the United States as proving the practicability of an aerial postal service. The trip is accomplished by mail steamers in eight hours; the Cuban pilot did it in 2 hrs. 25 mins. on a Moisant (Gnome) monoplane. Senor Augustine Parla (a Cuban also) started shortly after his successful confrère to make the same flight, but was forced to turn back owing to the snapping of sundry wires in the high wind. Senor Rosillo wins a £2,000 prize offered by the Havana City Council to the first Cuban who flies the Strait. It will be recollected that Mr. J. A. D. McCurdy, of Canada, attempted this flight in January, 1911, but came down in the wet ten miles from Havana.

The New British Height Record.

The British height record was raised to approximately 11,300 feet at Brooklands on Saturday last, May 31st, by Mr. Harry Hawker flying a Sopwith biplane, 80-h.p. Gnome engine, Chauvière propeller. The machine was the same on which he won the altitude competition at Hendon recently. There was a strong gusty wind blowing, but above 1,000 feet it was quite steady though very much stronger. The machine climbed quite steadily for about 40 minutes, and then the engine stopped with a frozen carburettor. The descent took about 10 or 12 minutes. Owing to the clearness of the air the machine was well in sight the whole time, though when once lost to sight it was hard to pick her up again. Mr. Hawker was nearly frozen as stiff as the carburettor when he descended, but showed no other signs of discomfort. He told the writer that when the engine began to stop he thought the pressure in the fuel tank had gone down, but on looking at the gauge he saw that it showed an increased pressure of 2 lbs. to the inch—this, of course, being due to starting at ordinary atmosphere pressure and reaching so considerable a height. He climbed with great regularity the whole way, and there is no doubt that with a warming arrangement for the carburettor he and the Sopwith machine could easily climb several thousands of feet further.

The Navy's Latest.

The Navy is nothing if not up to date. As there were no waterplanes of the Naval Air Service to assist in the regatta of the Home Fleet at Lamlash, H.M.S. "Hercules" proceeded to manufacture one on her own account. The Aeroplane is indebted to Rear-Admiral Mark Kerr for the accompanying photograph of this latest addition to the Service. The machine is described as a comic hydroaeroplane made out of wood and



A "fuzzograph" of Mr. Hawker taken immediately after his descent from 11,300 feet. The camera, not Mr. Hawker, did the shaking.

old canvas. Tobacco tins did duty for the cylinders of the Gnome engine and the ship's copper-punt was used for the floats. A fourteen-inch torpedo supplied the motive power under water. She behaved in a most realistic manner on a troubled sea with a strong squally wind, and turned completely over three times, to the joy of the pilots, who quite appreciated their unofficial bath. True, she did not fly, but more experienced designers have been less successful.

The Aerial Derby.

The Aerial Derby, which was to have been flown round London on Saturday next, has been indefinitely postponed owing to the refusal of the Home Office to permit the competitors flying across the "prohibited areas" along the Thames between Purfleet and Sheerness. A new course will be chosen and a new date announced as soon as possible. One would like to suggest that a half circuit of London would be a good idea. The course might be from Hendon to Epsom, back to Hendon, round to Grays in Essex—avoiding the prohibited area at Epping, and back to Hendon. The spectators at Hendon would thus see the start and finish, and the positions during the race, which would make it even more interesting.



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Questions in the House.

May 29th, 1913.—Written Answers.

Aircraft.

Mr. Sandys asked the Secretary for War the number of airships and aeroplanes, respectively, at present in the possession of the War Department; how many of these aeroplanes are biplanes and how many are monoplanes; how many of such monoplanes are being used for practice or instructional purposes, and how many are being reserved for use solely in time of war; how many of the biplanes are being regularly used for instructional or practice purposes; the districts in which detachments of the Royal Flying Corps are at present stationed; and how many biplanes and monoplanes are available for use at each of the stations?

Colonel Seely: The Royal Flying Corps is stationed at South Farnborough, Salisbury Plain, and Montrose. It is not considered to be in the interests of the public service to publish the other information which the hon. member asks for.

Mr. Sandys also asked the numbers of officers, non-commissioned officers, and men at present serving in the Royal Flying Corps; whether there are any civilian mechanics at present employed by the Royal Flying Corps, and, if so, how many; and what are the numbers of officers, non-commissioned officers, men, and mechanics at each of the stations of the Royal Flying Corps?

Colonel Seely: The strength of the Royal Flying Corps, Military Wing, on the 1st May, amounted to seventy officers and 583 other ranks; and at the Central Flying School there are six military officers and sixty-eight other ranks belonging to the Royal Flying Corps. There are no civil mechanics employed with the Military Wing or at the Central Flying School.

Mr. Sandys further asked the number of officers, non-commissioned officers, and men on the active list who are in possession of flying certificates; the date on which the first flying certificate was obtained; and whether any changes have been made in the tests since that date?

Colonel Seely: On the assumption that the certificates mentioned are those granted at the Central Flying School, there are sixty-three officers on the active list in possession of such certificates and there are twenty officers who had qualified before the school started; there are seventeen of other ranks in possession of certificates. The first officer to graduate at the school after it was opened on 17th August, 1912, obtained his certificate on 24th August, 1912. The tests have not been altered since last August.

June 2nd, 1913.—Written Answers.

Accident at Montrose.

Mr. Robert Harcourt asked the Secretary of State for War whether he has now received any report as to the Montrose aviation fatality.

Colonel Seely: I am informed that the probable reason for the accident was that the rear of the right upper wing tip broke upwards during a right-hand spiral, causing the aeroplane to swing to the right. The breaking up of the rear edge of the tip probably caused the neighbouring ribs to break, and force the front part of the plane to twist downwards. The resulting air pressure would then wrench the two outer plane struts out of their sockets, and the damage would spread along the wing. The wood of the rear of the wing tip, which was covered by the fabric where the damage probably started, had been repaired at some time, but it has not yet been possible to discover when and where this repair was carried out. The machine was carefully examined before the flight on May 27th, and reported all correct.

Malta.

Mr. Fell asked what aeroplanes or dirigible airships or hydroplanes are now stationed at Malta; and if any garages or hangars for the use of such craft have been erected there.

Mr. Churchill: No aircraft or accommodation for aircraft have yet been provided at Malta; nor do I wish to make any statement as to what is proposed.

A National Effort Commences.

The following communication has been sent to the Press by the National Aerial Defence Association (founded by the Navy League), 11, Victoria Street, London, S.W.:—

"May 29th, 1913.

"Sir,—We have the honour to inform you that at a public meeting held at the Mansion House on the 5th inst., and over which the Lord Mayor presided, it was unanimously decided to create an Association on the broadest non-party basis, having for its main object the development of a vigorous and carefully considered policy for the Aerial Defence of this country. At a business meeting of the promoters held at the Mansion House on the 16th inst., and attended by representatives of every section of the public of the City, the proposed Association was formally constituted subject to the control of a Grand Council and under the management of a representative Executive Committee.

"We take the earliest opportunity to appeal for the practical sympathy and generous financial support of the whole nation in order that the new movement may achieve the objects for which it has been created.

"These objects are generally:—

"(1) The organisation and maintenance of propaganda for the purpose of educating public opinion, and impressing upon the mind of the Nation as a whole the vital importance of the position which Aircraft now occupies in the defence of the British Empire.

"(2) Co-operation with local organisations in the promotion of local schemes connected with the objects of the Association.

"(3) The encouragement of experiment and research in relation to the objects of the Association.

"(4) The investigation of means to secure greater safety to pilots.

"The Association shall carry out its objects in co-operation with the Royal Aero Club, the Aeronautical Society of Great Britain and kindred societies in so far as they relate to the existing functions of those bodies.

"The funds of the Association shall not be employed to relieve the Government of any part of the proper provision which it should make for adequate Aerial Defence.

"The material considerations are:—

"(1) That Aerial Defence has become an essential feature of National Defence as a whole.

"(2) That this country compares very unfavourably with the great Continental Powers in the number and efficiency of its aircraft.

"(3) That immediate and energetic action is clearly necessary, and that it is desirable to strengthen the position of the Government by creating the largest possible volume of public opinion behind it.

"(4) That voluntary effort in foreign countries has enormously influenced the development of aircraft for defence purposes and that similar action is desirable in Great Britain.

"(5) That the movement, in its origin, in its organisation and in its propaganda has been and shall be maintained entirely apart from any consideration of party politics.

"The Lord Mayor of London, the Lord Blyth, and Sir George Wyatt Truscott, Bt., have been appointed Trustees of the National Aerial Defence Fund, which is now opened and which is under the supervision of these gentlemen and the Executive Committee of the Organisation.

"Remittances may be made payable to the Honorary Treasurer, National Aerial Defence Association, and crossed "Barclay and Co." and addressed to the Offices of the Association, 11, Victoria Street, London, S.W.

"We have the honour to be, Sir, your obedient servants, David Burnett (Lord Mayor of London), Blyth, Montagu, Charles Beresford (Admiral), George Wyatt Truscott, Edward Beauchamp, E. H. Seymour (Admiral of the Fleet), J. O. Hopkins (Admiral), Stanley Machin, E. Stuart Wortley, G. T. Pretyman, H. T. Arbuthnot, R. M. Ruck, H. C. L. Holden, Charles Ashton, A. C. E. Welby, H. Acton Blake, Walter V. Faber, A. Cecil Beck, Alan H. Burgoyne, W. Joynson Hicks, Almeric Paget, Lionel de Rothschild, Robert A. Yerburgh, Roger W. Wallace, A. E. Berriman, R. D. Blumenfeld, C. G. Grey, H. J. Ledeboer, B. S. Straus, V. Briscoe Tritton, C. C. Turner, A. H. Varnier, H. J. Watts, Herbert White, W. E. de B. Whittaker. P. J. Hannon, Hon. Secretary."

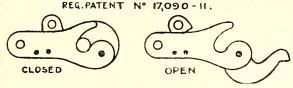
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Waterplanes—Some Criticisms and a Forecast.

BY A. C. BURGOINE.

*[The name of Mr. A. C. Burgoine is well known to all those connected with yachting and motor-boating, not only as a keenly critical writer, but as a designer of merit whose most revolutionary ideas have "made good." He does not pose as a designer of aeroplanes from an aerodynamic point of view, though his knowledge is greater than that of many who do. In the following article he sets forth his objections to present waterplane practice on grounds learnt by him in many years' experience of the water and its ways.—*Ed.]

A year ago I dared to suggest that the hydro-aeroplane of the future would be a boat with wings instead of an aeroplane with floats. Those of my readers—the article in question did not appear in The Aeroplane—who took any interest in the subject and were keen enough to take the matter up with me were sharply divided in opinion, with a strong majority in opposition to the views I had expressed. To-day, I know for a fact, several of my opponents have come round to my way of thinking, and the recent exhibition of the limitations of float-fitted aeroplanes at Monaco must surely have been enough to win over all the remainder, and taught others, who had not previously studied the question, that there is something wanting in present designs. When one has been in a minority for so long, and severely snubbed by many of the know-all experts who have been building these waterplanes—and smashing 'em up!—one must feel a certain amount of diffidence in coming out into the open again and airing the same old opinions. Yet that is precisely what I propose to do, for a year's work seems to have brought along nothing to cause any radical change of opinion; in fact, I am more than ever convinced that the machine of the future, for naval work at least, will have to be a good seaworthy boat that can fly, *not* an aeroplane that can scramble up from the surface of fairly smooth water and alight again on it with about a one in six chance of a smash.

General Unsuitability.

Those of us who had the advantage of watching the whole of the trials and racing at the recent Monaco meeting cannot fail to have been struck with the utter unfitness for practical every-day work of every machine in the place—without exception. I grant that scarce a day passed but that at least one machine was out and up, but that did not prove its fitness for the real work of war. And it is for war purposes that the waterplane is wanted by England. The sporting aspect can go hang for the present: we want machines that will be fit to use on "The Day," and there is no assurance that when that day comes it will be a fine one, with a smooth sea and gentle breeze, such as the present type of machines require if they are to be used with any degree of success. On the contrary, in order to nullify as far as possible this country's undoubted present superiority in torpedo craft and submarines, it is highly probable that attack will come just when there is every prospect of a spell of really bad weather, so that small craft will be of less relative value than they would be under better conditions. And, if we should be attacked during a rough season, of what use would our present type of float-fitted aeroplanes be? They would be absolutely restricted to rising from the smooth and sheltered waters of harbours or rivers, and would—and this is even of greater moment—be restricted to the same waters for landing on: for the water-plane of to-day seems to be able to get up from water on which it dare not alight without running considerable risk of a smash-up. Of what use, then, would the waterplane be? Or, rather, in what way would it be more useful than the ordinary aeroplane with wheels instead of floats?

And now, having generalised a bit, let us see what really are the weak points of waterplanes as we know them to-day. First and foremost, in every design, the idea of fitting floats to a land type aeroplane is radically wrong, and in that lies the whole crux of the matter. Then comes the fact that most builders do not seem to have even the slightest knowledge of the sea and what it is likely to do, or is capable of doing, so that the detail design and construction are bad—apart from the unsuitability of the general scheme. Then we have, in several types, the relative positioning of engine and crew, so that the latter are exposed to the most awful risks in the event of a smash, or so that the pilot is unable to see about him well enough to judge his distance and so forth in landing.

As to Engines.

Then, again, we have to admit that scarcely any of the engines in use are really fit for hard and continued work, most of them being of one or another of the "freak" types, which are far more trouble to keep running than engines of more orthodox design. The water-cooled engines in racing launches are trouble enough to their crews—at least many of them are—and need plenty of attention; but most of the aero engines seem to want attention all the time. There is a point in connection with these freak engines that receives less notice than it deserves, yet which becomes of outstanding importance in some circumstances, and that is the fuel and lubricating oil consumption per effective propeller horse power over a long run. Waterplanes will soon be expected to carry consumable stores for at least ten hours' work, so that quite a small difference in consumption rates will account for a lot of weight. For instance, with a 200 h.p. engine a difference of one-tenth of a pound per h.p. hour would account for no less than 200 lbs. on a ten hours' run—no inconsiderable amount. At Monaco, several machines that had done good work in practice were unable to rise with the extra weight of fuel and oil necessary for the long race of 500 kilometres, which is only about half as far as the machines of the future will be expected to travel on one fill-up. Then there is the question of air resistance of the engine and its appurtenances, a matter in which none of the rotary or radial engines can be said to shine. The head resistance of a vertical or "V" water-cooled engine must be vastly less than that of a Gnôme, or Salmson, or Anzani, while there seems no reason why the weight should be appreciably greater, especially as some of the water-cooled engines are so much more economical— and it is total weight of engine and stores that counts. Few aeroplane engines of to-day, air or water-cooled, can be depended on to run regularly for long periods at a very high rate of power output per pound of weight, and it may be taken as roughly correct that the higher the power-weight ratio the poorer the reliability is likely to be. This makes it likely that—unless there be some radical changes in engine design—the flying boat will have engines of less extreme design than those now in use in the majority of machines. Probably engines more after the type of those used in dirigible balloons will prove more suitable than the rampageous things used in many aeroplanes.

The Manners and Customs of Water.

In The Aeroplane of April 24th it was pointed out that waterplane makers have to learn that water is a good deal more solid than they suspect, and that it has an unpleasant habit of refusing to remain quiescent for their machines to land on. Racing launch designers have found that, at very high speeds, water is about as soft and yielding as concrete, when struck a fair and square blow; and is, moreover, like concrete that is in the throes of a bad earthquake. Waterplane builders have not always realised this to begin with, and, when they have eventually done so, seem to have resigned themselves to the fact, and restricted the use of their machines to days when the condition of the sea has been favourable, instead of boldly tackling the problem from the right end. Certainly, one or two constructors have attempted to overcome the rough water trouble by making their floats more or less springy, but they have not gone nearly far enough, and their machines are strictly limited as regards the roughness of the water on which they can be used. Much has been said about the heavy sea that was running at Monaco on the day on which the first waterplane race was started, but few observers can have realised that it was no more than a nice little "poppie," such as will be found round our coasts on three days out of four all the year round, and on at least nine days out of ten during the winter months. At no time did the height of the seas in the bay, from hollow to crest, exceed from three to four feet, and I do not think a single machine managed to rise from seas of such magnitude as that. Those that got away did so from the quieter patches, all except Moineau's high-powered Bréguet, which was simply

dragged up from the roughest of the water by the brute force of her 200-h.p. engine. That alone shows the value of plenty of power in a waterplane, but even Moineau was unable to tackle the bigger sea that he met off San Remo. Now a decent 30-foot racing launch could have been driven all-out all over the course at the time the race started—giving her crew a good shaking up, naturally. I grant that one of the torpedo boats was dipping her nose under occasionally, but that was caused by the swell, not by the actual waves or sea.

An Important Difference.

That brings out another thing that waterplane builders must learn; that the sea surface is frequently rough with waves of a few feet in height on the surface of long swells several feet high. A boat will follow the surface of the swell, jumping through or over the small waves; but a waterplane will only do so at moderate speeds. When she is travelling fast enough, the air lift will prevent her following the swell properly, until the lift becomes sufficient to just pull the floats clear of the water at the top of a swell—when the machine should fly at once. But, if the next swell happen to be a trifle higher than the last, the floats will bump it, and the drag on their after ends may be sufficient to make the whole machine suddenly trim by the head a trifle, so that the next swell is hit still harder, with the like and ever-accumulating effect.

That is why (or so it appears to me) it is difficult for a machine to shake herself clear in rough water. The succession of bumps on the drag edges of the float or floats keep making her nose dip, and no amount of tail elevator will actively lift the bow of the machine. On the other hand, a bow elevator would have an actual lifting power, and would probably manage to keep the nose of the machine up, so that she could get clear at once. It is accepted that bow elevators make a machine very sensitive in the air, but this would be no great disadvantage, and the extra power given would be invaluable on landing. When landing with a tail behind 'plane, straightening out, or lifting the bow, can only be effected by dropping the tail, which has the effect of dropping the floats, so that they touch sooner than they would otherwise do. At the same time speed is usually decreasing, so that the increased angle of incidence of the main surfaces has a reduced lifting power. With the tail in front, giving elevator would actively lift the front of the machine; and a pilot would be able, by quick manipulation of his elevator, to correct the nose-dipping tendency evinced when landing on broken water—on which landing must, perforce, be effected in a series of skips and jumps. Possibly, one might have two tails, using the one at the orthodox end when in flight, and the forward one just when rising or landing.

Design and Workmanship.

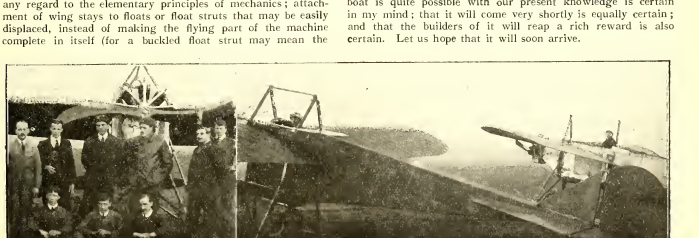
Finally, there is the question of detail design and workmanship—just where so many machines that fly well are badly deficient. We see floats that appear to have been built by men who know nothing at all of their business; disposition of the struts and bracing in the most ridiculous fashion, without any regard to the elementary principles of mechanics; attachment of wing stays to floats or float struts that may be easily displaced, instead of making the flying part of the machine complete in itself (for a buckled float strut may mean the giving out of wing stays and the complete wreck of the machine, owing to sudden change of wing angle); the unsuitable materials used in many parts, where it is essential that the action of salt water should be withstood with some degree of success; and, of course, the old and ever-present thousand-and-one little faults in construction—such as strainer screws half as strong as the wire, lugs bolted on so that the shearing stress on the bolts is twice as much as it ought to be, and so forth.

What is Coming

What we want, and what we will have sooner or later, is a more or less seaworthy launch, capable of at least forty knots afloat as a boat, and able to fly at good speed when required. Not necessarily as fast as a present-day machine, nor so fast as the present type will become presently; but quite fast enough for naval scouting work. And it must be remembered that a machine that can fly no faster than, say, sixty miles an hour there and back (and "there and back" includes rising from and alighting on the water under all reasonable conditions of weather), is a better and vastly more useful machine than one that, even if it manages to rise and do a hundred miles an hour in the air, smashes up, and drowns or kills its crew in landing. Not that the speed of the flying boat will be limited to sixty, any more than that of the other type of machine is limited to a hundred, for we shall see speeds in the future at present undreamed of except by some of us who are now called lunatics for our pains!

One would have to study the questions of weight distribution and position of pilot and observer—intimately connected one with the other. Placed low down in the hull of a flying boat, with the engine and tanks above them, the crew would have a good opportunity of seeing exactly where the water surface is, and what it looks like—which is most important. At the same time they would have a fine chance of being neatly killed in the event of a really bad landing, as it would be pretty certain that the top weights would come down on them, even if the whole machine did not concertina completely and bury them underneath. Changing the relative positions of engine and crew, so that the engine is in the boat (with chain or gear drive to the propeller) and the crew sitting up above, would eliminate a great deal of the risk, and might even give the men a better all-round look out. But no position for the crew could be much worse—from the observation point of view—than that of the men in some of the present monoplanes, and it is highly probable that not a few of the smashes on landing can be directly attributable to the difficulty with which the pilot can see downwards from his seat.

No! The waterplane, as we now know it, is not a practical proposition, nor is it likely to become one by any process of improvement. What is wanted is for some clever combination of designers to tackle the problem on entirely different lines, and to see what they can do in the shape of a flying boat. And it must be a *real boat*: not like the apparatus on which poor Gaudart was killed at Monaco—neither one thing nor the other, and badly built at that. That the flying boat is quite possible with our present knowledge is certain in my mind; that it will come very shortly is equally certain; and that the builders of it will reap a rich reward is also certain. Let us hope that it will soon arrive.



The Staff of the Vickers School, and two of the school monoplanes at Brooklands.

Flying at Hendon.

Thursday Night.

The night was quite favourable for flying, the wind having dropped almost entirely and the temperature high enough to make it pleasant without wearing heavy coats. After dark the aerodrome was like a corner of fairyland, all that was garish and hard in the daylight having disappeared in the magic charm of eventide. Thousands of little lights showed the lines of the enclosures. Mr. Grahame-White was the first to fly after dark and he circled the ground on the G.W. Maurice Farman with as much ease as though it were day and not night. Mr. Noel was up about the same time on the Grahame-White biplane (50-h.p. Gnome). An attempt was made by "Captain" Penfold to rise in a hot-air balloon that he might make a parachute descent, but owing to some unexplained cause he failed to rise high enough and had to descend again. The balloon was then allowed to drift away.

A model dirigible balloon without engine or screw was towed round the ground by motor car. The searchlights directed on it made it a thing of great beauty. Mr. Noel flew round it several times on a G.W. Maurice Farman biplane.

Throughout the evening a great number of fireworks, rockets and so on, were discharged from a point near No. 1 Pylon.

Saturday.

Though the sun made its scheduled appearance the wind was too unpleasant for competition flying. Exhibition and passenger flights were made by Mr. Noel (Maurice Farman biplane), M. Verrier (Maurice Farman biplane), M. Nardini (Deperdussin monoplane), and Mr. Slack (Blériot monoplane).

Sunday.

The flying on Sunday was quite up to the usual high level despite a dull and cheerless afternoon with a cold gusty wind. Mr. Verrier, as usual, was carrying passengers busily, among them being Captain Loftus Bryan, the well known authority on Irish agricultural problems, who received his baptism of the air, and his son Mr. Loftus Bryan, junior, who is a Blériot pilot, had his first experience on a biplane. Mr. Verrier also made several lengthy cross-country flights. Mr. Noel was busy on the G.-W. M. Farman, which Mr. Grahame-White also flew. Mr. Manton brought out a new G.-W. school biplane of Farman type (50-h.p. Gnome), and flew excellently, and Mr. Grahame-White flew this machine also. On the 60-h.p. Caudron, Mr. Turner took up many passengers, and M. Baumann on the school 35-h.p. made several flights with quite exciting spiral descents.

Mr. Whitehouse took his mother for her first flight on the Handley Page monoplane, flying well in spite of the machine being obviously under-powered with its somewhat ancient 50-h.p. Gnome. It is well to remember that this machine, which is purely experimental, weighs unloaded between 950 and 1,000 lbs., against the usual 600 lbs., of, say, a 50-h.p. Blériot, so it is not surprising that it flies sluggishly.

Mr. Cheeseman managed to coax several circuits out of the G.-W. School Blériot (35-h.p. Anzani), and Mr. J. L. Hall, on his own 50-h.p. Blériot, made quite an impression, many people taking him for Mr. Hamel when he was making spiral descents. Mr. Hamel went off to Brooklands early on his 50-h.p. Blériot and had not returned when the crowd had gone. Altogether it was quite a busy day.

A Cross-Country Duet.

On Wednesday, May 28th, Mr. Gordon Bell with Mr. C. C. Turner, of the "Pall Mall" and "Observer" as passenger, brought a Borel monoplane (80-h.p. Gnome) from Buc to Whitstable. Pilot, passenger, fuel and instruments totalled 700 lbs. A start was made at 4.30 a.m.· Crossing Versailles and St. Cloud at a height of 1,500 feet a northerly course was taken, and the altitude increased to about 2,200 feet, which was maintained for the greater part of the flight, except over the Channel, where it was increased to 6,000 feet.

The first descent was made at Milly (near Beauvais), 54½ miles having been covered in 1 hour 20 minutes; a strong but steady side wind had cut the speed down considerably. This landing was forced by fog, in which the aviators had lost their bearings. In the field at Milly, pilot and passenger had difficulty in keeping back a crowd of thirty enthusiastic bulls. When the fog cleared and a somewhat difficult restart was being made, the aforesaid herd very nearly succeeded in heading the machine off. Fog soon arrived again and forced a second descent at Thieulloy l'Abbaye, 24 miles in 50 minutes. An hour and a quarter elapsed before the atmosphere was clear enough for the flight to be continued. Two hundred sightseers witnessed the departure at 8.15 a.m.

The mist was still thick enough to render impossible any identification of the country, and after a while beyond this again the sea became visible, and a third landing became advisable. A small coast town was chosen, but difficulty was experienced in finding suitable ground. The town turned out to be St. Valerie, fifty miles out of the course. To their amazement the aviators discovered that they had been flying nearly due west from Thieulloy l'Abbaye instead of N.N.W. by N. half N. This third stretch was 62 miles and was covered in 2 hours 2 minutes, showing how strong the wind had become. At St. Valerie a delay of four hours was compelled by the mist. At 2.30 p.m. the cliff-top field of hillocks and tangled clover was left and a curved course for Le Crotoy was taken, which was reached in 40 minutes (49½ miles), the wind assisting. There, for 1½ hours, the two resisted the recommendations of their friends not to attempt the crossing.

Le Crotoy was left at 4.40, and the machine headed north for Calais, near which town Mr. Gordon Bell climbed to 5,600 feet, the English coast being plainly visible from that height. The French coast was passed over at 5.20. Progress was very slow, the wind being strong. The passage was about 31½ miles. The machine drifted farther east than was intended, the English coast being crossed at Pegwell Bay. Flying west, some violent eddies were encountered. At 6.30 the engine suddenly died of magneto failure. Eastchurch—the intended destination—had been in sight for some time, but an immediate landing had to be made near Whitstable, in a small field, the machine having to be steered between two trees, just about as wide apart as the wing tips. This clever feat brought the 300-mile trip to a successful conclusion.

The machine is a standard Borel two-seater as in use in the French Army, and has been bought by the Navy.

The time actually taken in the air was nearly 7 hours, which is the longest time a British aviator has ever been aloft in a cross-country flight.

The Royal Aero Club.

At the Committee meeting on the 27th ult., the following aviators' certificates were granted:—485, May 10th, 1913, René Louis Desoutter (Blériot monoplane,, Blériot School Headingley); 486, May 22nd, 1913, Lieut. Edward Gordon McClellan (Worcestershire Regt.) (Bristol biplane, Bristol School, Brooklands); 487, May 22nd, 1013, Manuel Zubiaga (Caudron biplane, Ewen School, Hendon), subject to permission of the Aero Club of Spain; 488, May 22nd, 1913, Toné Hippolyte Bayetto (Blériot monoplane, Blériot School, Hendon); 489, May 23rd, 1013, Shipwright Charles Victor Lacey, R.N. (Bristol biplane, Royal Naval Aviation School, Eastchurch); 490, May 24th, 1913, Staff-Surgeon Hardy Vesey Wells, R.N. (Bristol biplane, Royal Naval Aviation School, Eastchurch); 491, May 24, 1913, Richard Orr Paterson (Vickers biplane, Vickers School, Brooklands); 492, May 26th, 1913, Lieut. Paul Augustine Broder (5th Worcestershire Regt.) (Bristol biplane, Bristol School, Brooklands). The following aviators' certificates, taken in France, were approved:—

George Leith, Frederick Leith, and Lieut. A. Loftus Bryan.

Aeronautics in the North-East.

Upwards of two months ago the Council of the North-Eastern Institution of Engineers and Shipbuilders decided, after much deliberation, to form an Aeronautical Committee, it being considered that the study of aeronautics might advantageously be coupled with that of engineering and shipbuilding. At the same time, negotiations were entered into with the North-Eastern Aero Club, with the result that this body has now become absorbed in the Institution.

The committee is largely representative of the club that was, and the names are as follows:—The Hon. Sir Charles A. Parsons (chairman), Colonel R. Saxton White, Professor Henry Stroud, Messrs. J. Duncan Hodgson, J. H. Holmes, J. Cusworth, C. S. Vesey Brown, Gerald Stoney, J. Mitchell Moncreiff, A. H. Law, C. Ian Burrell.

The objects of this committee, among others, will be to arrange meetings for the discussion of aeronautical questions.

The Week's Work.

MONDAY, May 26th.

R.F.C., Central Flying School.—Fine, clear, calm early. Slight southerly wind later. On Avro 430, Lt Small 8 mins; A.M. Higginbottom with Sergt Jarman 25 mins, with Sergt Jarvis 20 mins, with A.M. Harrison 30 mins, with A.M. Baldock 15 mins. On Avro 432, A.M. Higginbottom with Sergt Jarman 6 and 14 mins, with Lt Todd 13 mins, with Lt Maude 12 mins, with Sergt Jarvis 35 mins; Major Fulton with Lt Mills 20 mins; Lt Mills 15 mins; Lt Wanklyn 10 mins. On Avro 433, Major Fulton with Lt Small 25 mins, with Lt Picton-Warlow 25 mins, with Lt Todd 20 mins, with Lt Maude 50 mins, with Lt Hordern 26 mins, with Lt Shekleton 20 mins; Lt Small 31 mins, Lt Mills 8 mins, Lt Hordern 23 mins, Lt Shekleton 18 mins, Major Fulton 15 mins.

On M. Farman 403 Lt Wilson 20 mins, Lt Pretyman 28 mins, Lt Noel 25 mins, Lt Gill 15 mins, Sergt Stafford 8 mins, A.M. McNamara 10 mins. On M. Farman 411 Lt Shepherd, R.N., with Lt Gaskell 40 mins, Engr-Lt Randall (8 flights) 49 mins. On M. Farman 418, Lt Shepherd with Lt Sitwell 71 mins (five flights) with Lt Gaskell 60 mins (5), with Lt King 7 mins; Lt Cutler 20 mins, Lt King 7 mins, A.M. Collis with P.O. Telegraphist Hogan 15 mins, with A.M. Savill 15 mins. On M. Farman 427 Lt Wilson 30 mins, Lt Gill 20 mins, Lt Shepherd 5 mins alone, with Mr. Dobson 7 mins, Lt Bourke 34 mins, Lt Cutler 9 mins, Lt Noel 15 mins. On M. Farman 426 Lt Fowler 50 mins, Capt Salmond with Lt Harvey-Kelly 47 mins, with Capt Fawcett 18 mins, Lt Harvey-Kelly 10 mins. On M. Farman 431, Major Trenchard 37 mins. Asst-Paymr Lidderdale 81 mins, M.M. T. O'Connor 37 mins.

On B.E. 416 Lt Stopford with Sergt Rigby 30 mins, with P.O. Grady 32 mins, with A.M. Copper 20 mins; Capt Salmond with Lt Birch 10 mins. On B.E. 417 Capt Salmond 6 mins alone, with Capt Hoare 48 mins, with Lt Morgan 85 mins, with Lt Newall 25 mins, with Lt Edmonds 30 mins, with Lt Rodwell 32 mins. On B.E. 440 Lt Stopford with Lt Birch 15 mins.

On Short 402, Major Gerrard with Lt Vaughan 19 mins, with Lt Hathorne 35 mins, with Lt Agar 5 mins, Lt Vaughan 44 mins, Lt Stopford with Lt Adams 36 mins, with Lt Agar 20 mins, with Lt Hathorne 12 mins, with Sergt-Major Levick 20 mins, and 10 mins alone. On H. Farman 434, Major Gerrard 5 mins. On H. Farman 435 Major Gerrard 10 mins; Lt. Mapplebeck 25 mins, landed and broke undercarriage and spars. On B.E. 438 Major Gerrard with Lt Reilly 12 mins. Lt Small arrived from Farnborough on M. Farman 307 and returned in evening.

R.F.C., Lark Hill.—Lt Cholmondeley on H. Farman and with A.M. Gleddon, S. M. Day, Lt Carmichael, Lt Conran and other passengers. Lt Roupell on H. Farman 286 to Overton and back; Lt Allen out on H. Farman 277, and with Lt Abercromby 98 mins. Lt Cholmondeley on H. Farman 274 from Farnborough 30 miles in 50 mins; Lt Porter on B.E. 203, Lt Small with A.M. Hobby for instruction on M. Farman 214 to Central Flying School. Capt. Mellor on M. Farman with Capt. Brocke of Devonshire Regiment, and Capt Anny as passengers.

R.F.C., Montrose.—Capt. Longcroft, on M. Farman, tuition to Sergt.-Majors Fletcher and Measures. Lieut. Waldron arrived at 9.45 a.m. from Durham on last of 4 "B.E.'s" from Farnborough, having left there at 4 a.m. and stopped at Berwick for petrol.

Hendon.—At Grahame-White School, Sir A. Sinclair straights with Instr. Cheeseman in passenger seat, then alone. Lieut. Evill (new pupil) straights with Instr. Cheeseman in passenger seat, later with Instr. Manton. Mr. W. Birchenough straights.

At W. H. Ewen School, Mr. Turner test on 35-h.p. Caudron No. 1, Lieut. W. C. Hicks and W. Warren circuits. M. Baumann test on 35-h.p. Caudron No. 2, F. W. Goodden circuits, and Messrs. George, Jagenberg and Lieut. Bewes rolling on same machine. Messrs. Gist and Goodden straights and half circuits.

At Bleriot School, Capt. Cox rolling on No. 1, came in contact with small mountain in aerodrome and "deteriorated" front wheel. Mr. Reilly on No. 3 circuits and figures of 8. Mr. Gandillon did second half of brevet test in excellent style, and Mr. Reilly attempted brevet but came down with engine trouble, landing with glide from 150 ft. Capt. Cox rolling on taxi No. 1. Mr. R. B. Slack 20 mins on 50-h.p. Gnome.

At Deperdussin School, Col. Smyth rolling and straights. Mr. Spratt testing No. 3 with new engine; flew very well. Mr. Hadson and Mr. Bauman on same. Lieut. Porte on 100-h.p.

At Temple School.—At 6 a.m. Mr. Temple test on Caudron. Messrs. Penny, Ritchie, Vaile, Lt Ambler and Lance straights. Later Mr. Temple took as passengers in turn Lt Ambler, and Messrs. Vaile and Lance.

At Willows' Aircraft School.—Balloon ascent from Hendon 5.25 p.m. in 50,000 cu. ft. Spheric, by Mr. Willows and three pupils (Mr. H. Barber, Capt Bernal, and Mr. R. W. Crocker. Duration 1 hr, landing at South Lodge, Enfield. Mr. Willows re-ascended at 7 p.m. with Mr. Valentine and Capt L. L. Atherton, descent at 8.30 p.m. at Nazeing, Essex, and balloon tethered until midnight.

Brooklands.—At Vickers School early Mr. Knight on biplane with Major Brancker. Major Brancker straights with Messrs. Waterfall and Knight. Mr. A. Knight (pupil) circuits with Mr. Knight. Pupil circuits alone. Mr. A. Knight r. and l. turns with Mr. Waterfall. In evening Mr. Barnwell on No. 2 mono, Mr. Knight and Lt Blatherwick straights.

At Bristol School, Mr. Bendall alone and with Lts Morgan and Scott-Malden; Mr. Merriam with Capt Wilson; Lt Duncan fig. 8s. Lt Broder passed brevet in fine style; Mr. Bendall with Mr. Grahame Harris, Mr. Merriam with Mr. Bernard Howard over Weybridge. 5.30 p.m. Messrs. Merriam and Bendall tests. Later with Lt Noott, Capt Wilson, Mr. Richard Powell and Mr. Grahame Harris; Capt Wilson alone first time. Lt Duncan alone.

Salisbury Plain (Bristol School).—Mr. Pixton test; Lt-Col Hamilton; Mr. Delaplane and Lt Burns alone; Major Hewetson with Mr. Pixton. Major Hewetson on mono taxi-ing. Mr. Busteed tractor biplane; Mr. Pixton with Capt Kindelan of Spanish Army flight. Mr. Pizey first time on new tractor biplane flying well at 2000 ft. Mr. Gipps and Mr. Adams on biplanes. Mr. Pizey then on tractor with passenger, machine catching fire as reported last week, pilot and passenger fortunately unhurt.

Brighton Shoreham.—In evening, Mr. Eric Pashley to Bognor on Blondeau-Hewlett biplane with Mr. Geere. Motor went wrong so stayed at Bognor.

At Avro School, new Avro waterplane (100-h.p. Gnome) being assembled. Mr. Shaw rolling.

Windermere.—Lakes Flying Co. "Water Hen" out testing and passenger carrying. Mr. Bland circuits and figures of 8.

TUESDAY, May 27th.

R.F.C., Central Flying School.—Clear early, slight northerly wind. Thick mist, from 5 a.m. all forenoon. Mod., bumpy, south-west wind from 5 p.m. On Avro 430, A.M. Higginbottom with Sergt. Jarman 6 mins; Major Fulton with Lt. Picton Warlow 30 mins. On Avro 432, Major Fulton with Lt. Brodribb 30 mins.; A.M. Higginbottom with Sergt. Jarvis 25 mins. On Avro 433, Major Fulton 10 mins alone, with Lt. Wanklyn 15 mins, with Lt. Todd 30 mins.

On M. Farman 403, Sergt Stafford 10 mins; Lt Bourke 15 mins; Lt Wilson 10 mins; Lt Pretyman 12 mins; Lt Noel 9 mins; Lt Shepherd 7 mins. On M. Farman 411, A.M. Collis with A.M. Turner 17 mins, 40 mins alone; Lt Noel 15 mins; A.M. McNamara 18 mins. On M. Farman 418, Lt. Shepherd 14 mins alone, with Lt Sitwell 60 mins, with Lt Gaskell 12 mins. On M. Farman 427, Lt Cutler 12 mins; Lt King 6 mins. On M. Farman 426, Lt Fowler 10 mins; Lt Harvey Kelly 17 mins; Lt Stopford with Sergt Porter 10 mins; Engr-Lt Randall 25 mins; Capt Salmond with Capt Hoare 35 mins. On M. Farman 431, Major Trenchard 42 mins; Asst-Payr Lidderdale 25 mins; M.M. T. O'Connor 7 and 12 mins; Engr-Lt Randall 35 mins.

On B.E. 416, Lt. Stopford with Sergt. Rigby 20 mins, with P.O. Grady 20 mins, with A.M. Copper 17 mins; Capt. Hoare 20 mins. Sergt. Rigby 20 mins rolling; P.O. Grady 10 mins rolling. On B.E. 417, Capt. Salmond with Lt. Birch 30 mins, with Lt Newall 33 mins, with Lt Edmonds 18 mins, with Lt. Rodwell 27 mins, and 5 mins alone. On

B.E. 449, Capt. Salmond 20 mins; Lt. Stopford with A.M. Lindon 18 mins.

On Short 402, Major Gerrard with Lt. Adams 25 mins; Lt. Vaughan 15 mins; Lt. Adams 5 and 30 mins. On H. Farman 434, Major Gerrard with Lt. Corballis 10 mins. On H. Farman 444, Major Gerrard with Lt. Freemantle 19 mins. On H. Farman 445, Major Gerrard with Lt. Stopford 9 mins.

R.F.C., Lark Hill.—Major Higgins, D.S.O., on "B.E." 203 with Lt. Porter. Lt. Wadham on "B.E." 203 twice, and with Lt. Anderson. Lts. Porter and H. Conran on same machine. Major Higgins on "B.E." 204, with passenger and alone. Lt. Cholmondley with Capt. Richardson, Col. Acland, and Major Wyatt Edgell on H. Farman 274. Lt. Roupell to Overton and back on H. Farman 286. Lt. Carmichael on H. Farman 284 from Farnborough. Lt. Allen with Lt. Anderson and alone on H Farman 277, and Major Higgins on H. Farman 277.

R.F.C., Montrose.—Capt. Herbert on M. Farman, Lieut. D. L. Arthur test on "B.E. 205." On returning from second flight wing snapped during spiral descent at 2,000 ft. and Lieut. Arthur killed.

Hendon.—At Graham-White School, Sir A. Sinclair straights alone, good landings. Sir Bryan Leighton circuits, and Lieut. Evill straights with Instr. Cheeseman. Mr. A. G. Power circuits. Mr. Carr circuits. Mr. Birchenough practising.

At W. H. Ewen School, M. Baumann test on 35-h.p. Caudron. Lieut. Hicks took brevet with clocklike regularity, banking nicely and landing on mark. Mr. F. W. Goodden flew circuits on same machine. Messrs. Pendlebury and Jagenberg rolling. Monsieur "X" testing new 45-h.p. Caudron, getting right away and making several circuits before coming down owing to engine trouble.

At Blériot School, Capt. Cox and Mr. Williams rolling on No. 1 taxi. Mr. Reilly again tried brevet test, but magneto trouble let him down after two figures of 8.

At Deperdussin School, Messrs. Hudson and Bauman on No. 3. Mr. Denis Murray joined school. Lieut. Brock rejoined. Mr. Murray first lesson rolling on taxi No. 2. Lieut. Brock rolling and hopping. Col. Smyth and Mr. Jaques rolling and straights. Mr. Bauman straights on No. 3. Mr. Brock testing on No. 5, followed by Mr. Barron circuits.

At Hanley Page, Mr. Whitehouse testing.

Brooklands.—At Vickers School, Mr. Knight on biplane with Major Brancker. Mr. Mitchell alone at 800 ft. Major Brancker with Mr. Waterfall Messrs. Waterfall and Orr Paterson alone. Mr. Orr Paterson with Mr. Mitchell as passenger. In evening Mr. Barnwell on biplane, then with Major Brancker and Mr. A. Knight. Major Brancker with Mr. Knight (pilot).

At Bristol School, Mr. Merriam with Mr. Powell, Mr. Harris, and Lt. Noott, pupils then alone for first time. Capt. Wilson straights, and his first circuit. Lt. Duncan right and left turns. Mr. Bendall with Lt. Morgan. Lt. Noott and Mr. Powell. Mr. Merriam with Mr. Harris and Mr. Skene (new pupil).

Salisbury Plain (Bristol School).—Mr. Pixton with Mr. Gipps. Lt. Burns, Mr. Gipps, and Mr. Delaplane alone. Lt.-Col. Hamilton with Mr. Pixton. Lt.-Col. Hamilton on biplane and Major Hewetson on mono alone.

Windermere.—Lakes Flying Co. "Water Hen" out with passengers.

Brighton-Shoreham.—At Avro School, Mr. Raynham on repaired Avro (Green). New propeller unsatisfactory. Flew straights well, but tried to turn outside aerodrome and was forced down. Machine pulled onto deserted road quite narrow, and Mr. Raynham took her off and did left-hand turn into aerodrome. Mr. Shaw rolling.

In morning Mr. Pashley returned from Bognor with passenger in 25 mins.

WEDNESDAY, May 28th.

R.F.C., Central Flying School.—Fine, clear. Moderate west wind. On Avro 430, Lt Small, 30 mins; Lt Mills, 30 mins; Major Fulton, 10 mins; Lt. Hordern, 30 mins; Capt Massy, 20 mins; Lt Shekleton, 24 mins. On Avro 432, A.M. Higginbottom with Sergt Jarvis, 45 mins, with Sergt Jarman 10 mins; with A.M. Harrison 20 mins, with A.M. Baldock 15 mins; Sergt Jarvis 5 mins straights alone; Major Fulton with Lt Todd, 5 mins; Lt Small, 28 mins; Lt Hordern, 28 mins; Capt Massy, 12 mins. On Avro 433, Major Fulton with Capt Massy 10 mins, with Lt Maude 40 mins, with Lt Brodribb 30 mins, with Lt Picton-Warlow 30 mins; Capt Massy, 25 mins; Lt Picton-Warlow, 37 mins; Lt Mills, 30 mins; Lt Shekleton, 32 mins.

On M. Farman 411, A.M. Collis with Telegraphist Stirling 19 mins, with A.M. Smith 14 mins, with P.O. Telegraphist Hogan 19 mins, with A.M. Webb 9 mins, with A.M. Savill 55 mins, with A.M. Turner 20 mins and 6 mins alone; Lt King, 6 mins; Lt Shepherd, 5 mins; Lt Gill, 16 mins; Lt Bourke, 24 mins. On M. Farman 418, Lt Shepherd 8 mins alone with E. R. A. Case 10 mins, with E. R. A. McCartan 5 mins, with Lt Gaskell 80 mins, with Lt Sitwell 85 mins. On M. Farman 426, Capt Salmond with Capt Fawcett 30 mins, with leading Seaman Clements 10 mins; Lt Harvey Kelly, 9 mins; Lt Fowler, 12 mins; Lt Stopford with Capt Fawcett, 12 mins. On M. Farman 431, Major Trenchard, 82 mins; Engr-Lt Randall, 53 mins; Asst-Paymr Lidderdale, 83 mins; M.M. T. O'Connor, 32 mins.

On B.E. 416, Lt Stopford with Lt Fowler 17 mins, with Capt Hoare 55 mins, with Lt Birch 20 mins; Capt Salmond, 10 mins: Lt Morgan, 30 mins. On B.E. 417, Capt Salmond, 5 mins, with Lt Newall 12 mins. On B.E. 449, Capt Salmond 22 mins alone, with Major Trenchard 5 mins; Major Gerrard with Lt Fowler, 12 mins.

On Short 402, Major Gerrard with Lt Hathorne 42 mins, with Lt Agar 33 mins, with Sergt-Major Levick 14 mins, with Sergt Waddington 12 mins, with Lt Adams 24 mins, with A.M. Yorkston 5 mins. Lt Vaughan 25 mins; Lt Adams, 50 mins; Lt Stopford with Chief Mechanic Scott 14 mins, with Ldg Seaman Barnshaw 11 mins, with Chief Mechanic Pack 10 mins. On H. Farman 434, Major Gerrard 5 mins, Lt Reilly 10 mins.

R.F.C., Lark Hill.—Lt Cholmondeley on H. Farman 274, four flights, with A.M. Dusling, A.M. Pearce, A.M. Goddard and A.M. Austin. Lt Wadham on B.E. 203 to 3,000 ft. Lt Anderson and Lt Conran on B.E. 203. Major Higgins, D.S.O., with Lt Anderson reconnaissance over Artillery Ranges on B.E. 204.

R.F.C., Montrose.—Examination of wrecked "B.E." by Major Sykes, Commandant of R.F.C. (Military Wing), during forenoon. Evening flights by Major Burke, Capt. Longcroft and Lieut. Lawrence on "B.E.s" Capt. Herbert and Lieut McLean on M. Farmans.

Hendon.—At Graham-White School, Lieut. Moore (new pupil), and Lieut. Evill straights with Instr. Cheeseman. Mr. A. G. Power circuits. Mr. R. H. Carr, Sir Bryan Leighton and Lieut. Moore all practising throughout the morning.

At W. H. Ewen School, M. Baumann excellent exhibition flight on 35-h.p. Caudron. Messrs. Warren and Gooden circuits. Messrs. Prosser, Pendlebury and Jagenberg straights.

At Blériot School, Lieut. G. S. Low rejoined school after 18 months absence and went out on No. 1 taxi rolling.

Brooklands.—At Vickers School, Mr. Barnwell on No. 2 mono. Mr. Knight test on biplane, then with Major Brancker. Messrs. Andreae and Mitchell on No. 2 mono. Major Brancker with Mr. Barnwell. Mr. A. Knight with Mr. Barnwell; Mr. A. Knight alone. Major Brancker with Mr. Knight. Mr. Barnwell and then Mr. Andreae on No. 2 mono Mr. A. Knight with Mr. Knight (pilot). Mr. Mitchell on No. 2 mono. Mr. A. Knight on biplane. Mr. Orr Paterson first attempt on mono.

At Bristol School, Mr. Bendall alone, then with Mr. Skene. Later with Capt Wilson, Lt Duncan and Mr. Skene.

Salisbury Plain (Bristol School).—Mr. Pizey test. Lt-Col Hamilton, Lt Burns and Mr. Delaplane and Mr. Adams all alone. Mr. Pizey with Mr. Delaplane in side-by-side mono. Mr. Gilbert (prospective pupil) with Mr. Pizey.

Brighton-Shoreham.—Mr. Raynham took Avro waterplane (100-h.p. Gnome) for maiden flight in sea mist. Machine got off extremely well and impressed everyone with its climbing. Mr. Shaw on 35 Avro straights in good style.

Liverpool (Waterloo).—Mr. Melly on Blériot two-seater

round Freshfield and Hightown in 23½ mins., reaching 1,600 ft. finishing up with fine figure of 8.

R.F.C., Central Flying School.—Fine, clear, freshening westerly wind, very strong in evening. On Avro 430, Lt Small 18 mins; Lt Picton Warlow 20 mins; Major Fulton 5 mins alone, with Lt Todd 45 mins; A.M. Higginbottom with Sergt Jarvis 55 mins, with Sergt Jarman 10 mins, with A.M. Baldock 45 mins; Sergt Jarvis 10 and 15 mins., rolling and straights alone. On Avro 432, Lt Hordern 18 mins. On Avro 433, Major Fulton with Lt Todd 15 mins, with Lt Brodribb 30 mins; Lt Mills 20 mins; Capt Massy 24 mins; Lt Shekleton 17 mins; Lt Wanklyn 10 mins. Lt Holt from Farnboro' on new Avro 418, time 68 mins; Major Fulton 10 mins alone.

On M. Farman 403, Lt Shepherd 6 mins; Lt Pretyman 12 mins; Lt Wilson 17 mins; Lt Cutler 50 mins. On M. Farman 411, A.M. Collis 40 mins alone, with A.M Webb 18 mins; Lt Gill 23 mins; Lt Bourke 20 mins. On M. Farman 418, Lt Shepherd with Lt Hudson 10 mins, with Lt Sitwell 68 mins; Sergt Stafford 5 mins. On M. Farman 427, Lt Shepherd 15 mins; Lt Noel 10 mins; Sergt Stafford 10 mins; Lt King 10 mins; Lt Pretyman 30 mins. On M. Farman 426, Capt. Salmond with Capt Fawcett 8 mins; Lt Fowler 20 mins; Lt Harvey-Kelly 30 mins for R.Ae.C. certificate. On M. Farman 431, Engr-Lt Randall 50 mins; Major Trenchard 10 mins; Major Ashmore 25 and 27 mins; Asst-Paymr Liddердale 20 mins; M.M. T. O'Connor 15 mins.

On B.E. 416, Lt Stopford with Lt Edmonds 90 mins, with Capt Hoare 30 mins; Lt Morgan 10 mins. On B.E. 417, Capt Salmond with Capt Hoare 25 mins, with Lt Newall 31 mins, with Lt Rodwell 45 mins, with Lt Fowler 36 mins, with Lt Birch 23 mins; Lt Morgan 15 mins. On B.E. 449, Capt Salmond 14 mins; Lt Stopford 12 mins.

On Short 402, Major Gerrard with Lt Vaughan 6 mins, with C.M. Pack 50 mins; Lt Stopford with Lt Hathorne 18 mins, with Lt Agar 25 mins; Lt Vaughan 14 mins; Lt Adams 33 mins for R.Ae.C. Certificate. On H. Farman 444, Major Gerrard with Capt. Paine, Commandant C.F.S., 10 mins, with Sergt Wigg 8 mins, with Lt Kelly 8 mins.

R.F.C., Lark Hill.—Lt Cholmondeley on H. Farman 274 with A.M. Mitchell, and alone. First time had to descend at Sarum with engine trouble. Lt Allen on H. Farman 274. Major Higgins three flights on B.E. 203, with A.M. Allen, another passenger, and alone. Lt Wadham on B.E. 203 with A.M. Pearl and alone. Lt Conran on B.E. 203 with A.M. Powell. Lt Anderson with A.M. Steed. Lt Porter with A.M. Bullock. Lt Wadham with A.M. Reeves. Lt Conran with A.M Bishop. Lt Anderson, with A.M. Mitchell.

R.F.C., Montrose.—Examination of wreckage by Messrs. Perrin and Manning of R.Ae.C. Evening flights by Capt. Longcroft and Lieut. Lawrence on "B.E.s" and Lieut. McLean on M. Farman, carrying Lieuts. Cull, Winn, and White, R.N., of the Submarine Flotilla, Dundee, as passengers.

Hendon.—At Grahame-White School. Sir A. Sinclair straights, and Lieuts. Evill and Moore with Instr. Cheeseman in passenger seat. Mr. A. G. Power circuits, also Sir Bryan Leighton

At W. H. Ewen School, M. Baumann test on 35-h.p. Caudron No. 1. Mr. W. Warren circuits. Lieut. Bewes and Messrs. Jagenberg and Pendlebury straights on 35-h.p. Caudron No. 2.

At Bleriot School, Lieut. Low and Capt. Cox rolling on taxi No. 1.

At Deperdussin School, Mr. Hudson straights, circuits and figures of 8 on No. 3. Mr. Bauman up. Col. Smyth straights on No. 2. Lieut. Brock straights on same. Messrs. Murray and Jaques rolling on taxi No. 2.

At Handley Page, Mr. Whitehouse with Mr. Fletcher.

Brooklands.—At Vickers School, Messrs. Barnwell and Knight tests. Mr. A. Knight for Brevet, very well, 200 ft. Mr. Knight test on No. 2 mono. Major Brancker with Mr. Barnwell. Mr. Mitchell straights on No. 2 mono. Major Brancker on biplane with Mr. Barnwell. In evening, Messrs. Knight and Barnwell testing biplane. Capt Balfour with Mr. Barnwell. Messrs. Orr Paterson, Waterfall, and Mitchell straights on No. 2 mono.

At Bristol School, Mr. Merriam test with Mr. Skene and Lt Morgan. Lt Duncan for half brevet. Capt Wilson, at school a week, ticket in excellent style. Lt Morgan circuits. Mr. Merriam with Mr. Harris, Lt Noott, Mr. Powell and with Mr. Skene to 2,000 ft. over Weybridge.

Mr. Bendall in evening with Mr. Skene, Lts Noott and Morgan, Mr. Powell. Lt Morgan alone, and Mr. Harris.

Salisbury Plain (Bristol School).—Mr. Pixton test. Mr. Gipps, Mr. Delaplane, Major Hewetson and Mr. Garnett on monos. Mr. Garnett on mono, Mr. Delaplane on biplane to 700 ft. Mr. Pizey on side-by-side mono with Major Hewetson, Mr. Garnett and Mr. Delaplane, Lt Burns r. and l. turns at 350 ft. Lt-Col Hamilton, Lt Priestly, R.N., and Lt Verdon, R.N., alone. Mr. Busteed on 80-hp. mono and Mr. Pixton on same.

Brighton-Shoreham.—Mr. Raynham with Mr. Alcock flew Avro waterplane to Brighton for tea and oil. Spiral glide from 2,000 ft. for final water test off bungalows; mysteriously damaged one float and was unable to regain shed via R. Adur and slipway.

Mr. Eric Pashley with his brother flew over to see what was wrong, and when over bungalows petrol pipe broke. Descended cleverly, dodging a bungalow and fence, and landed in rough field full of shingle. By clever manœuvring and shedding passenger he managed to get back to aerodrome.

Windermere.—Lakes Flying Co. "Water Hen" testing new underframe. Mr. Bland circuits.

FRIDAY, May 30th.

R.F.C., Central Flying School.—Fine, clear, moderate west wind early, very strong later. On Avro 432 Lt Wanklyn 22 mins; on Avro 433 Major Fulton 5 mins alone, with Sergt Jarman 20 mins with Lt Todd 30 mins, with Lt Maude 30 mins, with Lt Brodribb 15 mins; Lt Todd 8 and 10 mins.

On M. Farman 411 A.M. Collis with A.M. Smith 9 mins, with A.M. Savill 33 mins, with P.O. Telegraphist Hogan 7 mins, with Telegraphist Stirling 11 mins; Lt Gill 35 mins; Lt Bourke 18 mins. On M. Farman 418 Lt Pretyman 7 mins; Lt Shepherd with Lt Sitwell 20 mins, with Lt Gaskell 50 mins to Lark Hill and return; Lt Gaskell 40 mins, Lt Sitwell 6 mins. On M. Farman 427, Lt Wilson 28 mins, Lt Noel 18 mins; Lt King 8 mins. On M. Farman 426, Capt Salmond with Capt Fawcett 40 mins; Lt Harvey-Kelly 18 mins; Lt Fowler 10 mins. On M. Farman 431, Major Trenchard 23 mins; Major Ashmore 82 mins.

On B.E. 416, Lt Stopford with A.M. Copper 60 mins, with Sergt Rigby 65 mins. On B.E. 417 Capt Edmonds 27 mins, with Lt Rodwell 5 mins.

On Short 402, Major Gerrard with Leading Seaman Barnshaw 15 mins, with Lt Hathorne 20 mins. On H. Farman 412, Major Gerrard 10 mins.

Hendon.—At Grahame-White School, Sir A. Sinclair and Sir Bryan Leighton practising. Lieut. Evill straights with Instr. Cheeseman and alone. Windy in evening.

At W. H. Ewen School, M. Baumann test on 35-h.p. Caudron. Lieut. Bewes and Mr. C. George straights.

At Bleriot School, Lieut. Low rolling on No. 1.

At Deperdussin School, Col. Smyth straights. Other pupils thought it too foggy to turn up.

Brighton-Shoreham.—Capt. Dawes, R.F.C., with Lieut. Chinnery on M. Farman 224 arrived from Farnborough. Capt. Lushington, R.M.L.I., arrived from Eastchurch, ran out of petrol over Devil's Dyke and came down on downs. After replenishing tanks went on to Portsmouth. Capt. Dawes left in strong wind for Farnborough. Had to make several circuits before reaching 500 ft

Windermere.—Lakes Flying Co. "Water Hen" passenger carrying.

Brooklands.—At Vickers School, early Mr. Mitchell on No. 2 mono, Mr. Knight on biplane and with Major Brancker. Rain about hour and a half. Major Brancker on biplane with Mr. Knight. Capt Balfour with Mr. Knight behind. Mr. Mitchell on No. 2 mono.

At Bristol School, Mr. Bendall with Lt Noott, pupil, then alone. Lt Morgan figures of 8. Mr. Bendall with Mr. Skene. Mr. Merriam testing and with Mr. Skene. Lt Noott alone. Wind too strong for flying in afternoon and evening.

Salisbury Plain (Bristol School).—Mr. Pizey in side-by-side mono with Major Hewetson, Mr. Garnett and Mr. Delaplane. On biplane, Lt Burns, Mr. Adams, Lt-Col Hamilton

and Mr. Delaplane alone. Major Hewetson and Mr. Garnett on single mono.

SATURDAY, May 31st.

R.F.C., Lark Hill.—Lt Anderson on B.E. 203, and Lt Porter on B.E. 204 to Brooklands and back. Lt Conran on Avro 288 to Southampton and back. Lt Carmichael with A.M. Walland on H. Farman for 1 hr over Bulford Camp. Major Brooke-Popham on B.E. 203. Lt Roupell on H. Farman also doing good flying.

Brooklands.—Good show in afternoon, Mr. Gordon Bell on Martinsyde, going strong. Mr. Hawker on Sopwith beat height record, going to 11,400 ft. Also tested new Sopwith tractor with ailerons. Lt Spenser Grey, R.N., testing same. Machine very good on lateral controls.

Hendon.—See special report.

Liverpool (Waterloo).—Mr. Melly on two-seater before large troop of boy scouts, executed figures of 8 at 300 ft. to cultivate the young mind.

Brighton Shoreham.—Mr. Pashley across country to Worthing in 25 m.p.h. wind, very jumpy journey both going and returning

SUNDAY, June 1st.

Brighton Shoreham.—Mr. Pashley across country landed in ploughed field at E. Preston with engine trouble. Cycled on borrowed solid tyre cycle three miles to 'phone for assistance. Got off beautifully and flew back through heavy thunderstorm to Shoreham.

Foryd (N. Wales).—Mr. Hewett started at 8 p.m., circled over Rhyl, flew along coast towards Old Colwyn, thence to Colwyn Bay, Rhos, and finally Llandudno, over Little Orme. After circling Llandudno three times and flying over bay he returned to Rhyl over Colwyn Bay. Air very bad, although apparently quite calm. Mountains all round no doubt account for state of things. In flying to Llandudno he had very bad time over sea at Rhos. At about 1,500 feet suddenly machine started to drop. In spite of accelerating engine to its utmost and pulling cloche back, machine fell until about 200 feet from water, and then suddenly shot up like a rocket and reached about 2,000 feet very quickly. In coming back he went still higher to try effect and machine did same thing over same few hundred yards, but did not get so close to water as started higher. If he had only been at 1,000 feet he would have hit water before coming to end of bad stretch.

Hendon.—See special report.

At W. H. Ewen School, pupils out at 4.45 a.m. Mr. Turner test on 35-h.p. Caudron No. 1. Mr. Goodden circuits. M. Baumann's pupils on 35-h.p. Caudron No. 2. After tea Lt Rewes and Messrs. George and Jagenberg short flights.

Mr. Turner on 60 h.p. Caudron with passengers, and M. Baumann exhibition flight at 2,000 ft. with long glide.

At Handley Page, passengers included Mr. Whitehouse's mother and brother and three other passengers, including one lady.

Brooklands.—At Vickers School, Mr. Barnwell on biplane with passenger. Mr. Gordon Bell flying Martinsyde with passengers.

M. Salmet as a Constructor.

One gathers on quite reliable authority that M. Salmet, who toured the country for the "Daily Mail" last year, is designing and constructing a waterplane at Filey. Rumour has it that M. Salmet has the intention of setting out for the "Daily Mail" Waterplane Circuit of Britain, provided the Home office behave in a sensible way.

The Personal Cigarette.

Miss G. Ivy Sanders, who is a sister of Captain Sanders, formerly of Beccles, and who has herself done quite a good deal of flying as a passenger, writes that she feels confident that a good cigarette would prove very beneficial to the nerves of aviators, and would like to bring before the notice of readers of The Aeroplane the fact that she is able to supply cigarettes to any sample at a low price with the name of any person or firm printed on the papers either in ordinary type or in facsimile of the owner's original handwriting. The idea of cigarettes with one's own name has many advantages for advertising purposes, and buyers can rely on the cigarettes supplied by Miss Sanders being of excellent quality. Her address is 58, Pall Mall, S.W.

MISCELLANEOUS ADVERTISEMENTS

All Advertisements for this column should arrive at this office by 6 p.m. Monday, to ensure insertion.

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IMPORTANT NOTICE.—The "Geographia," Ltd., 33, Strand, W.C., have just issued their Price List, which includes an assortment of Aero Compasses, Barographs, Bearing Finder, Height Recorder, Aviation Maps and Map Cases. Some of the articles are indispensable to every aviator.

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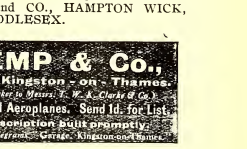
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Illuminated Night Flying Demonstrations AT HENDON

Next Thursday, June 12th, and Saturday, June 14th

COMMENCING AT 8.30 p.m.

THERE is no more wonderful sight than illuminated aeroplanes flying in the dark. Quite apart from the beauty and fascination of the spectacle, these exhibitions give one a peep into the future, when aeroplane services will be running as regularly by night as by day.

The displays also afford an opportunity of judging the usefulness of aeroplanes for night work during military operations. In order to demonstrate the immense possibilities of the aeroplane in war, a model of a Battleship will be employed in the display for Thursday, June 12th, which will be fired on and eventually blown up by explosives thrown from the aeroplanes.

On Saturday evening, June 14th, another Night Flying Exhibition will be given, after the usual Racing and special displays. On this occasion it has been arranged for the "Willows" Airship to manœuvre in conjunction with the aeroplanes.

If you wish to form an opinion as to the relative advantages of various types of aircraft, come to Hendon on June 14th.

The demonstrations on each evening will conclude with a magnificent firework display, "War in the Air."

It should be remembered that Hendon is the only place in London where full-sized aeroplanes make illuminated flights at night.

A special late return service of 'buses and trams connecting with all parts of London will be run for the convenience of visitors to Hendon on each of the above dates.

A Special Message to London Readers of "The Aeroplane."

IT is probable that you yourself visit Hendon regularly, but there may be many of your friends who take little or no interest in aviation. It may even be likely that at your place of business a good proportion of the staff never think of going to Hendon. They may not be aware that regular exhibitions of flying take place which they would enjoy even without a knowledge of the subject.

The flying meetings at Hendon are admittedly useful and even necessary to the progress of aviation in this country, but obviously their educational influence would be much wider if there were more visitors. This is where *you* can assist the advancement of aviation. Will you send for some of the show cards, etc., that are published and do your best to get them displayed?

Special endeavours are being made to attract more visitors to the exhibitions on Thursdays and Saturdays. There must be thousands of Londoners who are free on these afternoons and who are only waiting for the suggestion to pay a visit to Hendon. At the very least, it is a refreshing change from an ordinary outing, but it also provides an interest and fascination that other London rendezvous lack.

One visit is usually the forerunner of many others. Will you try to start someone with the "Hendon Habit"? If so, kindly drop a postcard to the London Aerodrome Offices, 166, Piccadilly, W., when some London Aerodrome literature will be gladly forwarded.

AERIAL DERBY POSTPONED

This Race, previously arranged for June 7th, has been postponed, the actual date to be announced later. On June 7th, at Hendon, there will be a grand Speed Handicap and a Cross-country Race, as well as exhibitions of clever flying by the popular Hendon aviators. Special displays every Thursday and Sunday afternoon from 3 p.m.

We shall be pleased to send a complete list of the splendid series of Meetings arranged for the present season. Drop a post-card to the London Aerodrome Offices, 166, Piccadilly, W.

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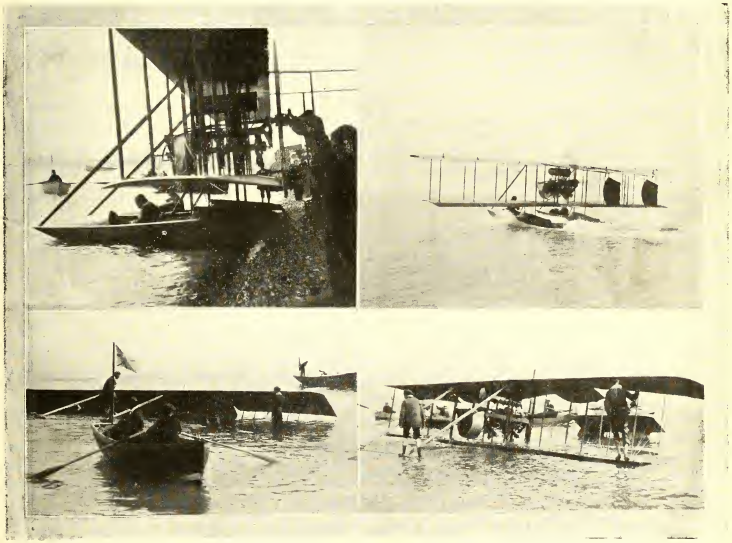
THE AEROPLANE

1d WEEKLY

Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, JUNE 12, 1913. No. 24.

THE RADLEY-ENGLAND INCIDENT.



The wrecking of the Radley-England biplane at Brighton. (1) Starting up. (2) Getting going. (3) Towing home. (4) Beaching the planes. (Mr. Gordon England may be seen standing on the bow of the submerged float.)

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EDITORIAL AND ADVERTISING OFFICE—166, PICCADILLY. TELEPHONE—5407 MAYFAIR. TELEGRAMS—AILERON, LONDON.

The Debate on the Royal Flying Corps.

Owing to the immense importance of the debate on the Royal Flying Corps which took place in the House of Commons on June 5th, the chief speeches are reprinted verbatim, and, except in the matter of Colonel Seely's more astonishing statements, without comment. These speeches have not been reproduced in full in the daily Press, which makes it necessary to devote a very great proportion of this week's AEROPLANE to this subject.—C. G. G.

Mr. JOYNSON-HICKS, in opening the debate, said: I rise for the purpose of dealing with the question of aviation. The time has come when we should once and for all get the exact facts in regard to the position of aviation in this country. I want to explain exactly my position in the matter, because of the statement made by the Secretary of State on the last occasion when we were discussing this matter. I made some suggestions as to the number of aeroplanes possessed by the Royal Army Flying Corps. The right hon. gentleman very strongly took exception to my statements, and wound up by saying:—

"I say, on my full responsibility as a Minister, that we have got 101 aeroplanes which are flying. I understand the hon. gentleman to say that that is not true. That is a very unusual statement to make."

Subsequently, in answer to a question, the right hon. gentleman expressed very strongly his opinion that I ought not to question his figures, and that when he makes a statement on his responsibility as a Minister, there is an end of the matter, and that it is impossible for him to say anything which will satisfy me on this question. I, in my position as a Member of this House, have exactly the same responsibility as any other Member. The right hon. gentleman and I occupy exactly the same position here as representatives of constituencies. We are appointed by constituencies to represent certain views before the House. While he puts before the House certain facts on his responsibility as a Minister, I put certain facts and statements upon my responsibility as a Member of Parliament. While it is quite impossible for the right hon. gentleman to know everything regarding the actual details, and while I agree that the statements he makes must be made on the best information he can get, equally the statements I have made and the questions I have put have been made and put on the best information I have been able to obtain, and the statements I shall make this afternoon will be made on the best information I have been able to get. I put the statements before the House with a full sense of my own personal responsibility in the matter. There is very great public anxiety in regard to this matter. It is not a mere scare raised by myself or any other Member of the House. The whole flying world, and every member of the Flying Corps itself, or many of them, could tell the House that they are anxious as to the position of affairs.

The flying Press is most anxious, and the public Press unconnected with the flying world is equally anxious. They are anxious because the right hon. gentleman has not made a full and complete disclosure of our position with regard to the aeroplanes which the Royal Flying Corps possess at the present moment. The scare, if it be a scare, can be got rid of in five minutes by the production of full information. It will not be sufficient for the right hon. gentleman to get up and say, "I have 101 flying machines." That I do not accept, and I do not think the public will accept it. What we want to know is where they are, what flying they are capable of, and whether the Royal Flying Corps is fully up to the proper strength. The right hon. gentleman stated on March 4th, 1912:—

"Both the Army and Navy Wing of the Air Corps will be always on a war footing, and the peace and war establishment will be the same."

That is what I want to pin the right hon. gentleman down to in regard to these particular squadrons. A war footing means, as I take it, that every squadron will be as ready as every battery of artillery on a war footing—that it will be ready with machines, transports, officers, and reserves. You cannot regard a battery of artillery as on a war footing if it is 25 per cent. down, and if its transport is not efficient. Only those batteries are on a war footing which are complete and ready to start to-morrow morning. We want to know whether the right hon. gentleman's flying squadrons are on a war footing to-day. On March 19th last he told us that we had 101 aeroplanes, and when I challenged him with respect to that statement on March 24th he admitted that there were only eighty-six of these machines up to the very moderate standard I suggested. I asked him if these 101 machines could rise 3,000 feet, fly 50 miles an hour, continue up for three hours, and be ready to go to war next morning. That is a very moderate estimate of the qualities of an aeroplane. The right hon. gentleman came down to the House after telephoning to the officials—he could not answer the question himself and had to get information from the officials—and reduced the number from 101 to eighty-six. He promised that by the end of March there would be 127 machines, of which 110 would be efficient, and that by May 31st there would be 148 machines, of which 130 would be up to the standard I suggested. He added that possibly the supply might be accelerated. He told us that it was not easy to get machines owing to the difficulty of getting supplies. I shall deal with the question of the difficulty of getting supplies in a moment, because I have taken upon myself to communicate with practically all the aeroplane manufacturers in this country, certainly the principal ones, and I shall be prepared to give the House their answer.

When the right hon. gentleman gave the pledge as to eighty-six of the machines being efficient and ready to go to war, I interrupted him in order to make clear that they were efficient. My suggestion was that they should be ready to start for war within a reasonable time. "Oh, yes," he said, "the eighty are ready to go." We were entitled to put question after question on the subject. We have been put off with answers of different kinds. Now we are entitled to ask the right hon. gentleman definitely whether these eighty or 120 machines are ready to go to war to-day. I began to ask my questions soon after that statement was made in March, but he declined to say how many were biplanes and how many were monoplanes. When my hon. friend the Member for East Antrim on April 15th asked him how many of the 101 aeroplanes had been flown across country, the reply was:—

"With the exception of two instructional machines at the Central Flying School, all the biplanes of the Royal Flying Corps have been flown across country since September 1st, 1912. None of the monoplanes has been flown since the accidents which occurred in the early part of September. A certain number of them were flown across country be-

tween September 1st and that date, but there are no detailed records."

—(Official Report, April 13th, 1913. Col. 1785.)

That again gave no information. On April 23rd I again inquired as to how many were ready to start for war, how many had been delivered since March 19th, and I asked also for various other particulars. The answer was that it was not in the public interest to give the information asked. He would not tell us how many of the whole machines which had flown across country were biplanes and how many were monoplanes. That is very unfair. It is putting upon us the almost impossible task of finding out for ourselves, and I do not think that is treating the House of Commons quite fairly in the matter. I asked what monoplanes were ready to fly, and whether the officers were allowed to fly Nieuport machines. He referred me to the answer he gave on March 13th. On referring to it I found it was no reply at all.

I have here a whole bundle of questions put during the last few months to the right hon. gentleman by myself and other hon. gentlemen, and the whole of the answers are very ingeniously worded. I suppose Ministers are entitled to adopt ingenious methods when evading questions in regard to matters upon which we desire to get information. I then turned to the Memorandum. He tells us in that document that it was decided to begin the organisation of the Royal Flying Corps by one airship squadron and three aeroplane squadrons in 1912-13. The fifth and sixth squadrons were to be raised this year. The right hon. gentleman said he looked forward confidently to

"the establishment on a permanent basis during 1913-14 of six out of the eight units required to complete our Expeditionary Force."

That would need sixty machines, plus 30 spare machines. That would make 90 machines. I personally would be inclined to say that it would be absolutely necessary to have sixty spare machines. That would bring the total up to 120 machines ready to go to war and on a war footing. The minimum speed should be 55 miles an hour, the carrying capacity 350 lbs., in addition to fuel for four and a half hours, three hours' flight at a height of 4,500 feet with the load mentioned, and a climbing speed of 200 feet per minute. When one of my hon. friends asked the right hon. gentleman, a few weeks ago, how many machines would fulfil these conditions, he replied, "That is not a test at all." But these are the right hon. gentleman's own figures; these the exact conditions which were laid down by the Board eighteen months ago for the competitions for military aeroplanes, and upon which the military aeroplanes competed at Salisbury Plain last August. Therefore I venture to suggest that they are not only not too high, but that they are too low, if anything, because they are eighteen months old. France, Germany, Italy and America have been going forward during that time enormously in the science of aviation, yet the right hon. gentleman will not tell us how many machines he has which will fulfil those tests. I am afraid it will be found that a very small number of his 120 machines could fulfil anything like those tests at the present moment.

The question of repairs is very vital, having regard to the accidents which have taken place during the last few weeks. In every other country in the world the Army Flying Corps has got mechanics of its own, but in no other country in the world do those mechanics execute vital repairs to machines. In France and Germany, when a machine is badly damaged, it is not repaired by the ordinary Army mechanic; it is sent back to the maker, who alone can tune up properly these extraordinarily tender and nice machines. Here the Army mechanic tackles monoplanes and biplanes and every variety of different makes. I asked the right hon. gentleman two months ago whether he would not entertain the desirability, certainly for the next few years, of sending these machines back periodically as they are sent back in foreign countries, even if there is no accident at all, to the makers for a complete overhauling and a complete refitting. Everybody knows who drives a motor car that after a certain number of miles have been run, we invariably send them back to the maker, if we are wise, at all events, for a thorough overhauling. We do not give it to the first jobbing artisan we can find. We send the Renault to the Renault, and the Daimler to the Daimler, and so on, because they alone know exactly how the engine is geared and how the different parts ought to be tuned up to the highest degree of efficiency. If this is necessary for a motor car, it is still more necessary in the case of the machines on which our young soldiers risk their lives day after day

The result of the Government policy is apparent in the recent accidents. The right hon. gentleman told us two months ago that in the B.E. machine evolved by the Royal Army Factory

"we have the best aeroplane in the world, and we have several of them. We have evolved in it a type which is far superior to that in the possession of any nation in the world."

The right hon. gentleman rather foreshadowed that other nations might smile; I think that they have been smiling for the last few months. I think it is an unfortunate thing that the Secretary of State, who is responsible for the well being of our Army, should come down to this House and boast that we have evolved a machine which is far superior to anything in the world. It is known by flying men on the Continent as well as here that though it is a good machine in many respects, and I am not criticising it, it certainly is not superior to any other machine in the world, and this machine has already had some bad accidents. One of them, I think, caused the accident to Lieutenant de Havilland, and one of them caused the accident to Lieutenant Rogers-Harrison. The Royal Aero Club which has been given a semi-official position in regard to flying at present which is recognised by the Government, has a technical committee which goes down to examine into fatal accidents. This Committee examined into this accident with its technical experts, and this is its report upon the right hon. gentleman's machine. This was not a B.E. machine, but a Cody machine. This was a machine which was flown a great deal during the last two years; it was built in 1911. Here is the report which I think the right hon. gentleman cannot get out of:—

"The committee is of opinion that the aircraft has structurally deteriorated from one cause or another since it was originally built in 1911"——

This Committee is a perfectly independent body. It has no hostility to the right hon. gentleman, and, indeed, it entertained him to dinner not very long ago——

"and that its condition at the time of the flight was precarious."

What is to be thought of the action of the Government in sending a young lieutenant up in a machine whose condition was precarious?

"The elevator was not designed with a view . . . . In view of the fact that aircraft are built of perishable material, the Committee strongly recommends that those which have been in existence for some time, whether they have been in use or not, should undergo periodical examination, both as regards their framework and their fabric with a view to ascertaining to what extent deterioration has taken place, and that the condition of the aircraft generally be reported at the time."

Nothing of the kind seems to have taken place with regard to this machine. You cannot have a stronger condemnation of the manner in which repairs are carried out than this.

Then take the death of Lieutenant Arthur recently when flying one of the perfect B.E. machines. It was flown and controlled by, I think, Major Burke, at Montrose, a few weeks ago. Some days after it was taken out and controlled by Lieutenant Arthur. I want to be perfectly frank in reference to the statements which I am going to make now. I will not state anything on my own responsibility unless I have investigated it. I do not vouch for them, but there are rumours going about of a very serious nature round about Farnborough and Aldershot to the effect that that machine was known to be in a bad condition before it was sent to Montrose.

The Secretary of State for War (Colonel Seely): This is a very serious matter. It is the first that I have heard of the rumours. I should be glad if the hon. gentleman would state on what he bases those rumours? [One would like to ask Colonel Seely whether a statement as to the condition of the



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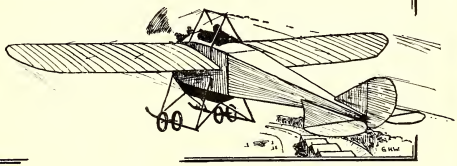
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machine was made to him two or three days before this debate by a Liberal member.—C. G. G.]

Mr. Joynson-Hicks: I think that the right hon. gentleman is entitled to ask that question. I base those rumours upon the report which has been made to me by two gentlemen.

Colonel Seely: By whom?

Mr. Joynson-Hicks: Wait a minute. I have said that I would not state anything on my own responsibility unless I had investigated it, and I prefaced this remark particularly by saying that this was rumour, and I did not guarantee its accuracy. I am a Member of Parliament, and when I hear that rumours of this kind are flying about, am I not to give the right hon. gentleman an opportunity of denying them because I cannot guarantee their accuracy? I stated perfectly clearly that I did not guarantee their accuracy, but the rumours are there. I do guarantee that, and I think that that is sufficient.

Colonel Seely: Is the position that you do not scruple to talk about rumours without mentioning the names of the persons from whom you heard them? I must ask the hon. gentleman to give me the name of any responsible source for these rumours. What does he mean by making allegations without giving me any opportunity to investigate them?

Mr. Joynson-Hicks: At present I will not give any names. The right hon. gentleman may smile. I am about, in a moment, to tell him all I know about them. I sent two gentlemen, one of whom is a retired Army officer, down to Farnborough this week. I asked them personally to report on this matter, and I interviewed them before they went. They came back to me and assured me that there are rumours of this kind. The right hon. gentleman may say that I ought to give him more information, but the choice lies between giving him the names of these people, which I am not prepared to do, and saying nothing whatever about the rumours, which the right hon. gentleman would know nothing about. I stated that I have been informed that there are rumours, and if I have been wrongly informed, and it is shown that I have been wrongly informed, I will at once express my regret for having mentioned those rumours. The right hon. gentleman will perfectly understand that I do not guarantee their truth; I merely say that those rumours exist, but I do not guarantee their accuracy. The right hon. gentleman has a right to know that there are those rumours, and he can investigate them. There is one very simple point in connection with this particular subject to which I wish to call attention. The hon. Member for Montrose Burghs (Mr. Robert Harcourt) put a question to the right hon. gentleman, who in his answer dealt with this particular machine. The question was put on the 2nd June, and in his answer the Secretary of War, to his own satisfaction, explained that it was an accident, but I will call attention to a very simple phrase in his answer, which was given only two days ago. The right hon. gentleman said, in reply to the hon. member's question:—

"The right upper wing tip broke upwards during a right-hand spiral, causing the aeroplane to swing to the right. The wood of the rear of the wing tip, which was covered by the fabric where the damage probably started, had been repaired at some time, but it has not yet been possible to discover when and where this repair was carried out."

The right hon. gentleman has 120 machines. I will take a business which is carried on in London, the business of a company which has over 2,000 motor omnibuses, and I can give him a record of every single overhauling and every single repair in respect to every one of those omnibuses, and the nature of each repair could be investigated in ten minutes. Here the right hon. gentleman has at his disposal the whole staff of the War Office, and has only 120 machines, machines of a vitally dangerous character to deal with. The right hon. gentleman admits that there was a repair of the woodwork of the machine to which I have referred at a vital point, yet there is no record of it; he cannot find any record of where that repair was done. What an admission in regard to the organisation of the Royal Flying Corps!

The right hon. gentleman told us in March of this year that there was a difficulty in getting engines, but added that he was taking active steps to have that weakness removed. On the 19th March he offered a prize of £1,000 for the details of a good engine, and he added, "The details of that competition are at this moment being settled by a sub-committee of the Air Committee, of which I am chairman." Ten weeks have elapsed, and nothing has been heard of those details. I should like to know where the details are to-day. The whole of the engine manufacturers are awaiting the details in order to go into the competition. The right hon. gentleman says he cannot get engines, and to this day these precious details of the competition are not forthcoming. I do not know whether the right hon. gentleman is too busy or whether the Committee has gone to sleep. To-day there is not a single machine in the Royal Flying Corps driven by a British engine. What is to happen at war time? We have got 120 machines driven by foreign engines of various kinds, and some of which have been smashed up at different places. In time of war how will you be able to get engines? First of all, you could not get them from France or from America, so that, above all things in the world, we must have a British industry created in order to provide engines for aircraft.

Colonel Seely: Hear, hear.

Mr. Joynson-Hicks: The right hon. gentleman cheers my remarks and goes to sleep on the details. Let me come to the question of the supply of machines, and perhaps here, again, the right hon. gentleman will be angry with me because I do not give the names. I have here letters written to me by a number of companies who manufacture aeroplanes. One letter, dated the 28th April, states:—

"Were we given an order for fifty machines we could turn them out at the rate of one machine per week. This would mean increasing our present staff about 50 per cent.; but an order of the above dimensions would be sufficient guarantee for our going to the necessary outlay. The trouble in the past has been that machines were only ordered in twos and threes, and consequently we have not had sufficient work in view to keep on a large staff."

Another company replied:—

"In the event of our being given an order for twenty-five or fifty machines of the same type, we could at this moment turn them out at the rate of one a week; and should there be any real prospect of such orders coming through, we would be in a position within six months to turn them out at the rate of five a week.

In another case the company, in a reply dated the 29th April, said:—

"We are just laying down some more machinery to enable us to deal with large Government orders for aeroplanes, and when this machinery is in working order, as it will be in about three weeks or a month, we shall be able to turn out Government machines at the rate of one a week.

Another company wrote:—

"With reference to your letter of the 26th inst. inquiring how long we would take to manufacture twenty-five or fifty aeroplanes should the Government require them, the answer entirely depends upon the size and type of machine and also the nature of the engine specified. The ordinary rate at which we can turn out aeroplanes of a standard engine and design is about two a fortnight commencing three months after date of order."

Another letter states:—

"We have in hand about forty aeroplanes for various governments."

This firm supplies aeroplanes all over the world, except to the English. Another company write that they are ready to turn out 200 aeroplanes and are in a position to increase the output to 300 per annum.

Colonel Seely: Will the hon. and learned gentleman tell me how many firms he wrote to?

Mr. Joynson-Hicks: I wrote to eight firms, of some of them I could give the names, and there are only two who deliberately ask that their names should not be stated, and I see they are the names of companies who have orders from the right hon. gentleman. I do not know that there would be any objection to the other names being known. Everybody knows that there are not more than eight first-class manufacturers of aeroplanes, and it is easy to gather the names of the firms who are prepared to deliver at the rate of one a week if they receive decent orders. But if the right hon. gentleman dribbles

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out orders for twos and threes he cannot expect the manufacturer to lay down sufficient plant for a rapid output. If he gives orders for twenty-five or fifty at a time he will have no difficulty in getting machines. Of the 126 machines the right hon. gentleman admitted that thirty-one are undergoing repair. That leaves ninety-five ready to go into battle to-morrow morning. It is all very well for the right hon. gentleman to say that it is not in accordance with public policy to say how many machines he is going to have, but I submit that we are entitled to know where he is getting the machines, and whether they are biplanes or monoplanes, and whether they are English or foreign. We get particulars of our torpedo boats, and we get particulars of guns, but every time we ask for information on this subject we are told that it is not in accordance with the public interest to give it. I am going, however, to give the figures. There are ninety-five machines at the disposal of the various squadrons, and which we are told are on a war footing, but of the ninety-five the machines of certain of the squadrons are hopelessly in the air.

Mr. Lee: Not in the air.

Mr. Joynson-Hicks: My hon. friend says they are not in the air. That is true, but I submit that they are in the air in another sense. The right hon. gentleman has informed us that he had four squadrons on a war footing a year ago. No. 1 squadron has one airship and three little machines—the "Beta," which is too small for war; the "Gamma," which is not much better; and the "Delta," which was a failure from the start, and has never done any prolonged flight. In regard to No. 2 squadron at Montrose, five machines were sent up early this year. Since then they have never all been in flying order, and there have rarely been more than two or three fit to fly, and sometimes all of them have been out of order. There are eight or nine officers of that squadron. Their machines have been overworked, they have been used for training, and it is idle and unfair and cruel to put an officer in peril of his life by sending him to fly a long distance across country in a machine which has been used by beginners to learn to fly, and has consequently been knocked about. A fortnight ago four more "B.E." biplanes were sent to the "Daily Telegraph" he got one good machine, a Henry Farman, one Henry Farman biplane of more than doubtful value, one old Nieuport monoplane that was able to fly in the Gordon-Bennett race three years ago and incorporating every fault criticised by the monoplane committee, one English-built biplane which had only been flown two or three times, one old 50-horse power biplane which had been used for training pupils for two years past. That statement has been repeated in another newspaper, the "Observer." I knew it all at the time. I was so disgusted and so ashamed that I would not even put these facts in a question before the House. I felt that if they were facts they were so detrimental to the management of the Royal Flying Corps that I would not make myself responsible for them. I only make myself responsible for them to-day to the extent that they were in the public Press, in a newspaper of integrity like the "Daily Telegraph," which charged the right hon. gentleman with trying to find anything he could get hold of in order to be able to complete the numbers he required. I apologise for having taken up so much time, but my remarks necessarily have dealt with details. It is only in regard to details that we can thrash out this matter. The information I have been able to gather is, that we have not got these machines. I have been forced against my wish to dispute the right hon. gentleman's statements time after time. I still believe my facts and figures are true, but if he will produce these machines and let the House of Commons or a Committee of the House see them fly, I shall be one of the first to congratulate him.

Mr. Sandys: I cannot think the situation is satisfactory at the present time. There is one fact on which I should like to congratulate the right hon. gentleman, that is that he is going, as I understand, to withdraw from that foolish attitude which he has taken up for some time past of withholding information on this question from the House. I hope the invitation which he has extended to my hon. friend for a personal investigation into the numbers and conditions of machines which are at the disposal of the War Department, he will extend a-

Colonel Seely dissented.

Mr. Joynson-Hicks: Perhaps the right hon. gentleman will tell us when he comes to reply what the machines can do. I have not got the figures with regard to the Farnborough Squadron. Unfortunately, my friend went on the King's Birthday, and he found it difficult to get exact information at Farnborough. When the Army is out for review, it puts its best fact in front. It turns out horses and Artillery as quickly as it can. They had a review the King went down to Farnborough three weeks ago. They turned out seventeen aeroplanes. That was all that this flying squadron could do. Eight of those were brought over from Lark Hill, and were not Farnborough machines at all. Again, on the King's Birthday, two days ago, there were twelve machines. This was at the review, where there is the beautiful business of saluting the Flag and so forth, which we all admire so much. For that they could only put up twelve machines, and then had to send to Lark Hill to get four of those machines. Where were the flying squadrons, each of which ought to have at least twelve machines? They have Montrose with six, Lark Hill with eight, Farnborough with eight, a total of twenty-two. Of those twenty-two eight are Maurice Farmans, which do not fly at more than fifty-two miles an hour, three or four are Henry Farmans, which cannot do more than sixty miles an hour, and eight are "B.E." biplanes, which machines, after their recent performance, are somewhat under a ban.

When those accidents occurred to monoplanes a few months ago the right hon. gentleman barred monoplanes. I should think he would probably pause before sending any more Army officers up in them. The right hon. gentleman can easily upset all my words, not by producing documents but by producing the machines. Machines cannot be hidden. These things are known to flying men all over the country, to civilian flyers and to manufacturers alike. Let the right hon. gentleman produce, not 120, let him produce ninety; let him produce eighty machines which can efficiently fly, and I will make him the most profound apology which has ever been made in this House.

Colonel Seely: Does the right hon. gentleman adhere to that? If so, I will arrange to start to-morrow.

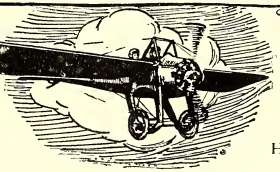
Mr. Joynson-Hicks: I am delighted that the right hon. gentleman accepts my challenge. He seems to think we have some personal hostility to him. Nothing of the kind. I have no interest in the business of aeroplanes. My sole interest is a desire to see we have got what we have paid for. The right hon. gentleman no doubt will allow a committee of this House to view these machines. He said a little time ago that I was not a responsible Member of the House, but if he will really produce these machines, and let us see them fly for three hours, and satisfy us, I will not be backward in the apology I will make to the right hon. gentleman. Perhaps I may have to make another apology to him, but I will deal with one more question, the question of that extraordinary order given by him at the end of March, 1913. He then gave an order by telegram or telephone to an aeroplane manufactory. I am quoting now from the "Daily Telegraph." The idea was that the right hon. gentleman wanted to get as many machines as he could, and he offered to buy from this manufacturer all his machines, new or old, monoplanes and biplanes, tested or untested. According to the "Daily Telegraph" he got one good

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little further to a Committee of a few members of this House, so that some others of us may have an opportunity of seeing the state of things as well as the hon gentleman.

Colonel Seely: The hon. gentleman must understand it is undesirable to have a Committee going round seeing all our aeroplanes, some of which, although he does not seem contented with them, we do not wish anyone to know about. What the hon. gentleman said was that if he could see eighty efficient aeroplanes, he would make me an ample apology. In order that all this mass of suspicion can be cleared, I will arrange for that. If the hon. gentleman wants to accompany him, by all means, but a Commission of Inquiry, certainly not.

Mr. Sandys: But it is not a personal matter between the hon. Member for Brentford and the Secretary of State for War; it is a national question. We have been endeavouring for some time past to elicit from the right hon. gentleman what really is the condition of this country with regard to aeroplanes. The right hon. gentleman for some reason or another, has for some time past refused to give us that information. Now that I see he has changed his policy, it is not fair that he should regard it merely as a personal question between himself and the hon. Member for Brentford. He should take the House into his confidence, and if he cannot give the information to the whole House, at any rate allow a representative Committee to be appointed, to go into the whole question. We should then be more satisfied than we are at the present time. After a speech which dealt so fully with the question as did that of the hon. Member for Brentford, it is not necessary to say much further; but personally I feel a great dissatisfaction at the large number of accidents which have occurred to members of the Royal Flying Corps during the last year. I believe that there have been during the last year five fatal accidents, in which eight lives have been lost, and it has been calculated, a calculation which was not disputed, that that represented over 10 per cent. of the number of qualified flyers in the Royal Flying Corps. These accidents occurred also in spite of the fact that during a considerable portion of the time, twenty-eight monoplanes, according to the right hon. gentleman's statement, were put upon one side, because they were not considered safe for employment.

Colonel Seely: Before the accidents.

Mr. Sandys: Yes, but during the later period, these twenty-eight were not in use. The state of things appears to me very unsatisfactory, because I understand these machines are going to be used in time of war. I think the right hon. gentleman once said that they would be available for use in time of war, although he considered they were dangerous.

Colonel Seely: I shall explain that later.

Mr. Sandys: Unless the right hon. gentleman gives a satisfactory explanation, I think it is a most unsatisfactory situation to have these machines employed in time of war when our officers have not had an opportunity of practising upon them in time of peace. With regard to the accident to Lieutenant Rogers Harrison and the report of the Royal Aero Club Committee, to which my hon. friend has already alluded, I hope the right hon. gentleman will be able to give a proper explanation of the grounds on which that report was based. Until he does so, I think the situation is extremely unsatisfactory. Speaking generally on this question of aviation, I do hope that the right hon. gentleman and his military advisers are now beginning to realise the extreme gravity of the situation to this country. The employment of aircraft for naval and military purposes cannot, it seems to me, be denied to be one of the most remarkable and striking features of naval and military development. In every country in the world the naval and military authorities are fully aware that the introduction of aviation is going to make most far-reaching changes in naval and military strategy, and of all the countries in the world the position of this country is one that makes the matter one of the greatest importance. The past history of this country, our constitutional development, our social progress, and our world-wide Imperial responsibility, make this question one of the greatest importance to us. The dominating factor in the situation is that we are an island Power separated from the rest of Europe by a strip of water. Now, however, we have to remember that the situation has entirely changed. We enter into this question on an equality with other European Powers. I do hope the right hon. gentleman and his friends will realise that something on a far larger scale must be done than anything which has been attempted up to the present, and that he will remember that half measures are no longer possible, and give us an aviation service which will really provide adequately for the safety and security of the country.

(To be continued.)

A Real Aerial Defence.

It has been brought to our notice—it comes from the City, so it must be true—that Britain has at last acquired a real means of enforcing the Aerial Navigation Act. It is alleged that a great inventor has persuaded the Secretary of State for War that he has an invention which, by means of Hertzian, or some similar waves—vulgarly known as "wireless"—will cause the magneto ignition apparatus of all aircraft within a radius of seven miles to cease from functioning. In other words, the engines of all aircraft within range will be stopped, aeroplanes will be forced to land where they can, and dirigibles will be left at the mercy of the winds.

The account further states that the inventor has been allotted a piece of Government land in the neighbourhood of Folkestone which is to be thoroughly surrounded by sentries to prevent foreign Powers who have neglected to provide themselves with City correspondents or copies of this journal from obtaining the slightest inkling of the fact that experiments are in progress.

As this invention, which appears to be a secret known only to Colonel Seely, and perhaps the German Government, will render all hostile aeroplanes innocuous, it will obviously do away with the necessity for this country possessing more aeroplanes than are necessary to give employment to the officials of the Royal Aircraft Factory at full Trade Union rates; which may perhaps account for the orders which have not been distributed to independent manufacturers.

One might, however, point out that there is considerable danger of the invention also operating on the magnetos of motor-driven transport wagons, despatch-riders' motor-cycles, and so forth. In this case, one takes it that tuning forks will be provided to all drivers of such vehicles so that they may tune their magnetos out of phase with the defensive "wireless." The engines of such aeroplanes as may be necessary to our own forces will presumably be ignited by the old style battery ignition, and as a stand-by the machines will be fitted with a clockwork or elastic drive.

It is suggested that as a further defensive measure, the Power owning attacking aeroplanes should be sued in the civil courts for damages done by the enforced descents, and for trespass, thus accelerating a financial crisis in a nation already overburdened by the taxation necessary to provide armament.

All that is now required is another invention to prevent balloons from drifting over our prohibited areas at home or positions in the field abroad. One who moves in high official circles suggests that adequate defence might be provided by a battalion of politicians who, by addressing their rhetoric to the offending balloons, would produce such a column of hot air that it would be impossible to maintain the balloons at an altitude sufficiently near the ground for any practical observations to be made.—C. G. G.

The General Utility Plane.

A fast monoplane is quite a handy thing to have about the house, despite the beliefs of interested parties in Farnborough. On Monday last Mr. Gordon Bell had to put a Short hydrobiplane through its tests at the Naval Aeroplane base at Isle of Grain, so he, being then at Eastchurch, got out the Borel monoplane which he recently flew over from Paris with Mr. C. C. Turner, and flew over to Grain in a 30 miles per hour wind. There he put the big hydro through her tests, which, being a Short, she naturally passed in excellent style, and thereafter flew back to Eastchurch on the Borel in a wind which had by then risen to over 40 miles per hour. Grain Island is only about six miles by air and about fifteen or twenty by road, so the practical use of the aeroplane was again demonstrated.

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Disorganisation in the Flying Corps.

BY W. E. de B. WHITTAKER.

A new and complicated system cannot be expected to attain perfection in the first year of its existence, especially when its methods and principles are largely experimental. Those parts of the system which are common to the general scheme of life can, however, be expected to keep the usual level of efficiency. The new principles are merely grafted on to the old body, the complications arising from the manner of adjustment.

The great nations have each formed aviation corps of various strengths and differing types. Each has had its individual trouble and each has made efforts to surmount the trouble in as proper a manner as possible. And whatever the state of efficiency may be in the aerial sections of foreign armies they have at least the men and the materiel. Money is not grudged. There is nothing niggardly in the manner of their being.

By the nature of our national conditions of military service and to some extent by the geographical position of these islands our army is very much smaller than those maintained by the other Great Powers of Europe. Despite the Navy and the intervening seas, it may happen in the future that Great Britain will have to take part in a land war in Europe. If, therefore, it is hoped that we may maintain our high position in the Concert of the Powers, it is necessary that our deficiency of numbers shall be made up by a higher degree of efficiency than is common on the Continent. In order to attain the desired degree of efficiency each unit of the Service must be in a condition as near perfection as possible. There is no time for the policy of "muddling through." There is never any time for that.

A year ago the new scheme of organisation for the newly founded Royal Flying Corps was placed before the public. There were to be no difficulties in the way and no delay in the work to be done. England was again to teach the world. Colonel Seely was satisfied, and with the ease and fluency of his typical Parliamentary manner the Flying Corps was to reach perfection. At the time it was thought that his scheme was not big enough, but even his severest critics were disposed to wait developments. Inadequate though the programme might be, it was at least a step in the right direction. [It will be remembered that this paper cordially supported Colonel Seely's scheme at the time.—Ed.]

There were to be seven aeroplane squadrons in the Royal Flying Corps. Rightly or wrongly, it was understood at the time that this was but a preliminary move and that the Corps would be enlarged later. One also expected the Corps to be brought up to establishment during the past year. Actually only three of the squadrons are in existence at all and none of these is up to establishment. Each aeroplane squadron is supposed to have twelve aeroplanes with three more as reserve. Therefore only forty-five aeroplanes are required to complete the three squadrons already formed.

The true figures relating to those squadrons are as follows, all machines in possession of these squadrons are counted, not merely those ready to fly at a moment's notice :—

No. 2 Squadron, Montrose	8	aeroplanes.
No. 3 Squadron, Lark Hill	11	,,
No. 4 Squadron, Farnborough	10	,,
Total	29	

There are at the Central Flying School between 20



BRISTOLS IN GERMANY.—Above, Mr. Henry Jullerot on the new type monoplane (80-h.p. Gnome). Left, Lieut. Von Stoll on a 50-h.p. tandem. Right, Lieut. Von Borcke on a 50-h.p. single-seater.—Note the oil screen.

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and 30 machines. Thus the total number of aeroplanes in use in the Royal Flying Corps is at most only 50 or 60.

Why are the aeroplane squadrons left below strength? Is it because there are not enough aeroplanes in the possession of the War Department, or is it because of a system of disorganisation? The Secretary of State for War, speaking in the House of Commons on Thursday last, assured his hearers that the Army had in its possession over 120 aeroplanes in a fit state for active service. If one accepts this statement as true, and all Ministers of the Crown are supposed to tell the truth, then it is not lack of machines which is causing all the trouble. In fact, the Army has too many aeroplanes for its immediate needs!

But what is being done with all the aeroplanes which are not attached to the three existing squadrons and the Central Flying School? Are they kept in a sort of museum at Farnborough? It is a curious problem.

The official view is that there are 120 aeroplanes. If that is true, how is it that in one squadron three officers are flying one aeroplane turn and turn about? How is it that in order that an apparently complete squadron might appear at the march past at Farnborough on the King's Birthday several aeroplanes had to be borrowed from the squadron at Lark Hill?

The confusion in the Flying Corps is not only a matter of materiel—it concerns personnel as well. There are, we are told, 146 pilots in the Army. What is being done with them? No squadron is yet up to establishment, and yet we have so large a number of pilots.

A candidate for admission to the Royal Flying Corps, Military Wing, is in most cases made to undergo a course of training at the Central Flying School. This, as a rule, lasts three months, after which the officer, if he passes the necessary tests and examination, is sent to the Military Wing either for continuous service or on the Reserve. He then goes to Farnborough for a month's extra training, or is attached to one of the outlying squadrons. Several officers have recently been attached in this manner. If the officer is a civilian candidate this month is supposed to give him an insight into the ordinary routine of Army life. But his flying training is not necessarily to suffer. He is supposed to have opportunities of flying also. Yet in several cases officers have been given no opportunity whatever of flying during the probationary period. Mr. Desmond Arthur was killed while making his first flight alone since his attachment to the squadron at Montrose. He had been in the air on one occasion only while in Scotland and then as a passenger with another officer. I do not mean that this abstention from flying had anything whatever to do with his death, but I am simply quoting an instance that I know.

Another officer spent his entire month at Farnborough without once flying alone in a machine.

The general administration of the Royal Flying Corps would disgrace even the army of a South American State. One instance, officially stated, will prove my point. An aeroplane belonging to the Royal Flying Corps collapses in the air and its pilot is killed. It is explained in the House of Commons that a part of the aeroplane broke owing to a previous repair.

Colonel Seely went on to say that it had "not yet been possible to discover when and where this repair was carried out." From this statement one would gather that no adequate records are kept. It seems appalling that alterations may be made to an aeroplane and that none can be made responsible at a later date because no particulars were taken.

Colonel Seely proudly stated in debate that our list of fatalities during last year was half that of the French aviation service. One wonders if Colonel Seely when glances at the reports that must be made to him by the British Military Attaché in Paris. Even the daily papers would help. If he thinks that the fatalities are in proportion to the amount of flying done, then he does indeed need help.

Naval and Military Aeronautics.

From the "London Gazette," June 5th, War Office, Regular Forces:—

Royal Flying Corps, Military Wing.—Maj. J. F. A. Higgins, D.S.O., R.A., Flight Commander, to be a Squadron Commander; Capt. G. W. P. Dawes, Princess Charlotte of Wales's (Royal Berkshire Reg.), Flying Officer, to be a Flight Commander (May 30th); Lieut. L. C. Rogers-Harrison (since deceased), Royal Warwickshire Reg., to be a Flying Officer (April 1st); Lieut. A. Christie, R.A., to be a Flying Officer, to be seconded (April 30th).

No. 1 Squadron (dirigibles and man-lifting kites), R.F.C., is now undergoing regular training under the direct supervision of Major Sykes, Commandant, R.F.C. The "Gamma" has been despatched on a six days' reconnaissance tour, making camp at Bracknell, Berks. Captain the Hon. C Brabazon, of the Irish Guards, is in charge. The "Beta" has been engaged nearer headquarters, chiefly in bomb-dropping. The bombs are dropped by special mechanism attached to a sighting apparatus. One learns that the shooting has been good, but that the height from which they were dropped was not over a thousand feet. The "Beta" made a trip from Aldershot to Portsmouth on Monday afternoon, circling over the naval port and descending on the lawn at Whale Island.

The interest taken in cross-country flights by Service aviators is shown by the accounts which reach this office of the arrival of pilots at various places. One is thus able to trace an excellent cross-country tour recently done by Captain Wildman Lushington, R.M.A., on an "S.38" type Short biplane. Leaving Eastchurch on Friday morning, May 31st, he was brought down by shortage of petrol on Hove Golf Links, as was noted last week. After filling up he went on to Portsmouth, where he landed on the drill field at Eastney, and spent the week-end there, taking up a number of passengers on the Friday evening. Starting on Monday morning, he left at 10.45 a.m. and reached Farnborough at 11.30. He told a correspondent he was able to see the sheds at Farnborough when at a height of 3,000 feet over Havant. The same evening he left Farnborough at 4.30 and arrived at the Central Flying School, Upavon, at 5.45 against a stiff head wind.

On Tuesday he left Upavon at 9.15 and arrived at Farnborough at 10.15, after a somewhat bumpy journey. In the afternoon he flew over to Wellington College, covering the ten miles in eight minutes, landing on the cricket field. He started to return about 6.10 p.m., but the engine stopped suddenly when about 40 feet up, with the result that he had to do a sharp turn to get back into the cricket field, and, unfortunately, broke a strut in landing. That evening he was requested to deliver a discourse on aviation to the boys at Wellington, and naturally he was most enthusiastically received, for happily the greatest enthusiasm for flying prevails in all our public schools. That evening the broken strut was replaced, and on Wednesday he flew back to Farnborough.

There is no doubt that if the cross-country flights of this nature made by our Service pilots were made better known to the British public there would be considerably more interest taken in aviation, and it would be easier for those who are responsible for our Flying Corps to develop this branch of the Services as it should be developed.

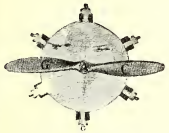
On Saturday, May 31st, Lieutenant Courtney, R.N., flew a new Maurice Farman (70-h.p. Renault) from Hendon to the new naval aeroplane base at Yarmouth.

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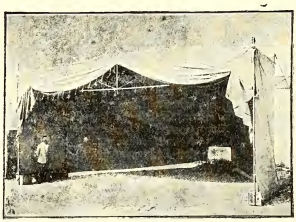
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On Monday, June 2, Lieuts. Cholmondeley and Carmichael on a Henry Farman 80-h.p. Gnome flew from Lark Hill to Colchester, where a military air station is to be established.

A movement is on foot in Squadron 2 to erect a monument to the late Lieut. Arthur.

Permission has been granted to Squadron 2 at Montrose to erect a hangar at St. Andrew's for use as a stopping place during reconnaissance flights.

INDIA.

Preparations are being made in India for the formation of a Flying School and Corps for the Indian service. Three lakhs of rupees have been allotted for the purpose, and a site for the school will be selected at Sitapur. Captain S. D. Massy, 29th Punjabis, has been appointed commandant of the new school. The instructors will be Captain C. G. Hoare, adjutant, 30th King George's Own Central India Horse; Lieutenant C. L. N. Newall, adjutant, 2nd King Edward's Own Gurkha Rifles; and Lieutenant H. L. Reilly, quartermaster, 82nd Punjabis. These officers are at present at the Central Flying School, Upavon, for a long course of instruction. When they return to India, a class will be formed at Sitapur for officers obtaining the flying certificate, and a course of instruction will be instituted to form an Indian Army Flying Corps.

FRANCE.

Captain Barès (General Staff), O.C. the Buc centre, left that place on a Maurice Farman biplane (70 h.p. Renault) on May 31st at 6 p.m. and flew over Melun, Fontainebleau, Moret, and Sens. At the latter place he remained the night, leaving his machine roped down in a field quite uncovered despite a storm of wind and rain. At six o'clock on the following morning he returned to Buc. His passenger throughout the trip was his mechanic, Cherrier. During the previous week he flew in all a distance of 750 miles.

Captain Guillabert, a recently-trained military pilot, is a man whose progress it is worth while to watch. He has learnt to fly at the Nieuport school at Villacoublay, and made his first circuit in the air on April 15th. A fortnight ago, though the weather was unfavourable, he carried out the necessary tests for the superior brevet in the course of two days. On the first day he flew to Mourmelon and back, and early on the next morning he flew over a triangular course—Villacoublay, Orleans, Chartres, and Villacoublay. This is progress which would delight the heart of the Secretary of State for War.

The escadrilles at Toul and Epinal continue to keep careful watch over the fated frontier. Day by day the aeroplanes of both escadrilles have patrolled many miles of the debatable land with that precision for which the French soldier is rightly famed. The Toul escadrille is entirely of Henry Farman biplanes under the command of Captain-aviator Schneegans. On June 2nd Lieutenant Mazier and Sous-officiers Guitou and Berlioux each flying a Henry Farman biplane (80 h.p. Gnome) carried officer observers on a reconnaissance of the surrounding country during the morning for a period of two hours. In the afternoon Captain Schneegans took the place of Lieutenant Mazier, and with the two Sous-officiers made a reconnaissance over Toul, Frouard, Nancy, Pont Saint Vincent, Commercy, and St. Mihiel, rising in the course of the journey to a height of over 7,000 feet.

Escadrille No. 5 (Epinal) consists of seven Maurice Farman biplanes under the command of Captain-aviator de Saint-Quentin. His pilots are Lieutenants d'Abrantes, Battini, Bordes, and Grezeaud, Quartermaster Quennehen and Sapper de Loynes d'Autroche. This escadrille has been at Chalons during the past five weeks working in combination with artillery. On May 27th the escadrilles left Chalons for Verdun carrying seven officer observers. On the following day it flew down the valleys of the Meurthe and the Moselle by Pont á Mousson, Nancy, Bavon, Charmes, and so to Epinal.

A military commission composed of Lieutenants Mailfert, Devienne, Mantureaux, and Levasseur visited the Bathiat Sanchez school at Mourmelon last week and inspected several machines. On a 50 horse-power monoplane with a useful load of 150 kilos Bathiat rose 975 feet in two minutes.

Lieutenant-aviator Brocard, who left Reims on May 20th with Sapper Delage as passenger on his Deperdussin monoplane (100 h.p. Gnome), has returned to his base, having visited the following places in his tour:—Troyes, Dijon, Grenoble, Chambery, Annecy, Lyon, and Macon. This gives no real idea of the extent of the tour which was actually 850 miles in length.

The escadrille of Henry Farman biplanes at Sissonne under Lieutenant de Gensac covered a good deal of country during the fifteen days ending on June 3rd. Flights were made to and from Mourmelon, Reims, Coucy le Chateau, Mezieges, Rethel, Saint Quentin, Verviers, and Cambrai. This represents a very good fortnight's work.

A certain number of aeroplanes are now being fitted with the wireless outfits constructed as a result of recent experimentation. A two-seated Deperdussin monoplane flown by Captain Lagarde and Lieutenant Dietrich, and the Maurice Farman biplane of Lieutenant Mauger de Varennes have both been fitted with the set.—W.

GERMANY.

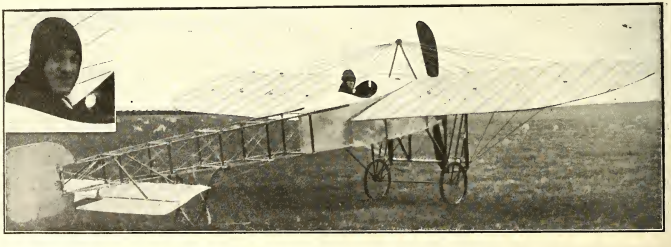
A hydro-aeroplane station is to be formed at Warnemunde in the near future.

The Zeppelin naval dirigible L1 left Hamburg on the morning of June 3rd, and passing over Potsdam flew to Madgebourg. It reached Johannisthal finally about four o'clock in the afternoon.—W.

Twelve aviation officers have received the Order of the Crown, fourth class, for good work done at the field practice of the 2nd Guards Brigade, when the Emperor himself was present.—B.

AUSTRIA-HUNGARY.

The first continued use of hydro-aeroplanes in the operations of war was during the recent blockade of the coasts of Montenegro. The Austrian squadron attached to the international fleet had with it three Donnet-Leveque hydro-biplanes,



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which were delivered by the makers during the course of last year. These aeroplanes, attended by torpedo-boats, travelled from Pola on the Adriatic to the Montenegrin coast. Each day until the end of the blockade these machines made lengthy reconnaissances along the coasts. At the end of the investment they returned to Pola by air—a flight of 300 miles from point to point.—W.

Following an invitation from the Emperor Francis Joseph, Count Zeppelin, on the "Sachsen," paid a visit to Vienna on June 9th. The "Sachsen" started from Baden-Baden at 5.30 a.m., and reached Vienna at 1.30 p.m. After cruising for 20 minutes over the capital, the airship took a straight course to Schoenbrunn Castle, there manœuvring for 20 minutes, and saluting the Emperor. Thence she proceeded to the Aspern Fields, where she landed. Besides Count Zeppelin and his son, there were 22 other people on board.

The journey from Baden-Baden, which is about 430 miles, was made in about eight hours, an average speed of over 50 miles an hour. An express train from Baden-Baden to Vienna takes 16½ hours. Count Zeppelin was the Emperor's guest in Vienna.

RUSSIA.

Lieutenant-aviator Balabouchkine, while flying with a passenger near Peterhof on May 31st, side-slipped to the ground and was killed. His passenger, though seriously injured, will recover.

Several officer-aviators flying under orders travelled from Ossovetz to Brest-Litovsk, 154 versts in 1h. 51m. The machines used were Blériot monoplanes and Henry Farman biplanes.

Nine naval aviators flying Curtiss hydro-biplanes made a flight from Sevastopol over the sea and the Crimean coast at a height of 4,000 feet.—W.

BELGIUM.

Six officers have been detailed to Brasschaet that they may be trained as military aviators. Their course of training should be completed some time in July.

No cross-country flights have been made at Brasschaet by the military staff during the past week owing to a number of officers being away on leave. During the month of May over 200 flights were made at Brasschaet, totalling fifty hours in all.

ITALY.

Lieutenant-aviator Poggi flying a Maurice Farman biplane (70 h.p. Renault engine) left Nettuno, near Rome, at 5.15 a.m., and landed at Naples at 6.45 a.m. In the afternoon he left Naples at 5.28 p.m., and returned to his base, having passed over Terracini and Velletri on his way.

The two cruisers, "Goeber" and "Strassburg," of the Imperial German Navy, arrived at Venice on June 3rd. As soon as they were signalled, Commandant Ginocchio took the escadrille of hydro-aeroplanes, stationed at Venice, out to sea, and met the two cruisers.—W.

BRAZIL.

The Brazilian War Office is very keen on furthering aviation, and has placed a tract of land at the disposal of an Italian firm for five years. The firm has undertaken to lay out an up-to-date aviation ground with all necessary buildings, and to instruct thirty-five military pupils per annum, the Government paying a subsidy for each man. Naturally, no limit is set to the number of civilians who wish to become pilots. On the expiration of the five years the school becomes the property of the Government, and the eleven machines the management have to keep by agreement must be purchased by the State at the half of their original value.—B.

CHILI.

Chili has developed, or intends to develop, its aerial fleet with more vigour than any other nation on the American Continent. The Republic has recently ordered several Sanchez-Besa biplanes. Ten Blériot monoplanes have already been delivered.

On June 1st at Buc, the Envoy and Minister Plenipotentiary of the Chilian Republic, with his staff and a number of Chilian residents in Paris in attendance, formally took delivery of a number of Blériot monoplanes.—W.

FOREIGN NOTES.

France.

On June 1st. M. Vial, who is learning to fly at the Maurice Farman school at Buc, contrived to practise in spite of torrential rain. Such facts as these show progress very clearly.

M. Brindejonc des Moulinais has announced his intention of competing for the sixth prize of the Coupe Pommery. He will start from Villacoublay on a Morane-Saulnier monoplane.

A very regrettable accident occurred at Buc on June 5th. M. Bernard, the well-known Maurice Farman pilot and his passenger were both killed. After having given a series of lessons to his pupils he took Mlle. Rose Amicel for a flight over the surrounding country. After having flown as long as he considered necessary, he turned over the Trianon Restaurant and started to descend facing the wind. His passenger, it is believed, slipped forward on her seat and her skirt jambed the second lever (it was a dual control machine) and the pilot was unable to pull up when nearing the ground. The machine dashed straight into the earth and both pilot and passenger received injuries from which they died later.

Enrique-Bernard Langaror was born on August 4th, 1880, at Rinpeyron. He took his brevet (No. 710) on a Maurice Farman biplane at Buc on October 23, 1911.

The flying match between M. Audemars and M. Garros took place at Juvisy on June 8th. The three events were a race over a distance of 500 kilometres, an altitude flight of 8,000 feet (and landing tests), and an exhibition of fantastic flying. M. Garros who has been seriously unwell only left his sick-bed an hour before the contest. He was defeated in each of the three contests. The aeroplanes used were Morane-Saulnier monoplanes (80-h.p. Gnome engines).

On June 3rd, M. Perreyon, who holds the world's height record (19,292 feet) for pilot alone, secured also the world's record for height with a passenger. Flying at Buc in a tandem Blériot (160 Gnome), he rose to 1,000 metres (3,281 feet) in three minutes, and disappeared among the clouds. He left the ground at 11.1 a.m. and landed one hour and seven minutes afterwards, his barometer showing a height attained of 16,733 feet. M. Perreyon's passenger was Mme. de Plagino, a pupil of the Blériot school. Among the enthusiastic spectators present was M. Blériot himself, who congratulated the modest record-man heartily on regaining for France this passenger height record, previously held by Lieutenant von Blaschke (Austria) with 14,391 feet.

The exact distance (in a straight line) between Biarritz and Kollum, the extreme points of M. Guillaux's winning Pommery flight has been worked out as 1,229.6 km. (764.07 miles), and this figure has been accepted by the authorities concerned.

Switzerland.

The aviator, Atillio Maffei, has been elected cantonal deputy in his province, and on May 29th he flew from Lugano to Bellinzona on a Blériot monoplane to attend a sitting of the Chamber.

Cuba.

Captain Augustine Parla (the Cuban aviator who made an unsuccessful start for the Key West-Havana flight on the day when Señor Rosillo completed it) succeeded on May 19th in flying from Key West to Muriel Bay, four miles from Havana. He gains £1,000 offered by the City of Havana for the second Cuban to make the flight. He piloted a Curtiss hydro-aeroplane, and took 2 hours 55 minutes.

Germany.

The second monoplane race with simultaneous start during the Johannisthal week brought out Laikch (100-h.p. L.V.G.), Schlegel (100-h.p. Aviatik) and Stiploschek (100-h.p. Jeannin). Laikch won in 11 minutes 28 seconds, with Stiploschek second and Schlegel third. Owing to a protest entered against Laikch by the other two, on the ground that his machine had not been taken off beforehand, Laikch was disqualified and the prizes awarded to the others.

On Sunday, June 1st, the last day of the week, the news arrived that Michaelis, who came to grief on the Tuesday, had died from heart failure. Now there exists a rule, stringently followed by the aviators, in the regulations of the League of German Aeroplane Pilots, that no flying is to be done on the day a pilot has a fatal accident or succumbs to his injuries on the spot where the accident occurred—in this case Johannisthal. In order not to spoil the week, as thousands of spectators would be present, the pilots agreed to start hors

concours only and no man to remain longer aloft than twenty minutes. Hanuschke alone dissented and eventually flew for the prize money. The other men declared their intention of non-starting until the management announced the competitions finally closed. Not to disappoint entirely the huge mass of spectators that lined the ground, this was done at seven o'clock, and a number of machines were brought out and flown for the time agreed upon. The public, having no knowledge of Michaelis's demise or of the existence of the regulation with its resulting decision was entirely at a loss to explain the absence of any flying, barring Hanuschke's attempts, and although it behaved with remarkable patience, yet the day was completely spoilt, all the more as the weather was very fine. Had Hanuschke taken up a different standpoint, all the men would have turned out in proper time and sequence, and the public would have enjoyed a fine spectacle.

The "Boden See" hydro-aeroplane meeting commences on June 29th, and will last till July 3rd. Up to the time of writing, sixteen machines were entered, comprising a Rumpler, several Ottos, Aviatiks, Argos, Albatros, and one each Union, Strack and Gotha. The pilots are men of standing, such as, Lindpaintner, Hirth, Weyl, Sablatnig, Buechner, Thelen, and others. A flying-boat has also been nominated.

The Schütte-Lang dirigible, now being constructed at Mannheim, is to have a capacity of 24,000 cubic metres and to be fitted with four motors of 200 h.p. each. There are five cars proposed for the vessel, rather a large number. No date has been fixed for the completion of the cruiser, and considering that it took several years to build the first of this type, this precaution is not unwise, although the constructors have naturally profited by their earlier experiences.—B.

Italy.

The Aerial Locomotion Show just over at Turin, though owing to limited space it only contained some fifteen types of flying machines, caused many, your subscriber among them, to open their eyes widely. The military aspect of the science, though well to the fore, did not play to the gallery—there were no cannons or other weapons of offence, nor did I see any armoured craft.

The desired appeal to patriotic interest was made rather by a collection of machines and parts of air vessels, which did service in Libia. I noted a Nieuport, a Bréguet, a Bristol, and others. Very interesting little sideshows, arranged by the men attached to the military aviation stations, comprising a varied assortment of photographs, models, relics, sketches, humorous and otherwise, refreshed the weary stand-trotter at intervals.

The complete nacelle of "P. II."—with "wireless" installed—which did so well in Africa was shown, also an automatic cinematographic apparatus driven by a small propeller for obtaining topographical reliefs, the invention of the commanding officer of the Aviation Battalion; a spherical balloon, a travelling repair shop, breakdown and transport vehicles, etc., were exhibited by the Government. The repair shop lacked nothing but an opportunity to be useful.

To everyone's regret only one waterflier, a foreigner, was visible. Evidently the Naval arm needs no booming!

Several of the participants in the recent trials, both prized and otherwise, were exposed for our admiration, the Bòoba alone of the former at the time of my visits. The elevator is of very unusual and complicated shape, the reason of which I could not elicit except an æsthetic one.

The S.I.T. biplane, mounted on an original landing carriage, of which the springs are enclosed in a cylindrical telescopic sheath, looked very neat and strong. The builders also show their Turin Blériots, a very white effect being obtained, which is useful for distinguishing them from the original, when in flight, and a most dangerous-looking petrol-tank armchair, destined presumably only for a Guy Fawkes celebration. The fire question seems to be studied solely with a view to encouraging disasters.

A leisured examination of the new Star machine, the S.I.A. monoplane which has since done a non-stop Milan-Rome with passenger trip, confirmed me in the impression I got of it at Mirafiori, viz., that it offers great possibilities for observation. Its distinctive and strong landing carriage and its undoubted speed, should bring the builders good business.

Now that Italy is to be represented at the Gordon-Bennett this year, Signor Caproni's latest production may be worth watching. The latter differs largely from the 1912 record-holders, tail arrangements, a new chassis with steerable wheels, and improved springing, being the most visible differences. The designer tells me, that aero-dynamically, too, it is much more efficient, but so far I have not been fortunate enough, or, rather, the machine has been too unfortunate for me to see it in flight.

The Asteria mono, mounts, or will mount, something very new in the way of warp control. I am not at liberty to mention it yet, as I was privileged to woggle its lever some months back at the works.

Among the side-shows the most attractive was the S.P.A. motor exhibit, four engines each with its own specified purpose, forming a unique spectacle, totally lacking in exhibition plating and similar eye-blinding expedients—to wit—For dirigibles, the well-tried vertical 4-cylinder W.C. 200 h.p.; for waterplanes, a new 8-cylinder horizontal W.C. twin propellered 90 h.p.; for biplanes a V. 8-cylinder W.C. 90 h.p.; for monoplanes a radial 10-cylinder air-cooled 90 h.p.

The waterplane power-producer is so unusual in design that as the attendant did not entirely know how to explain it, and did not allow me to dismantle it, I left full of mystified admiration. I can best describe it as an extraordinarily compact dumb-bell-shaped affair, the part which one grips in the dumb-bell is occupied in the engine by the 8 cylinders, the heads of which all touch and the two crank-cases of which form the business ends of our dumb-bell. To understand this, one must realise that the engine appears as two four-cylinder V (with a very closed V) motors, formed into one block and placed so that a line drawn from crankcase to crankcase, is parallel to the ground (at first sight it appears as a two-cylinder horizontal engine). An external encased shaft connects the two cranks, and as well as driving the valve gear, two magnetos, etc., permits of either engine being cut out when not needed. The propellers are driven direct, *i.e.*, in opposite directions.

The L.U.C.T. shown on the next stand with overhead M.O. valves, is coming to its proper place at last. The ease with which these motors start from cold and restart when in flight is due partly to the M.O.V., but also largely to the passage of the mixture along the pipes which lead from the crankcase up the sides of the cylinders to the inlet valves. The firm do not intend to couple two engines to obtain greater power; the new 9-cylinder 125 by 150 is an example of their policy. A petrol turbine, called the M.I.R.T., in which oil pump, oil tank, and water cooling have been dispensed with, will be followed during its trials by most people interested in motors.

The Neri propellers with which several known pilots, such as Weymann and Naval Lt. Rossi have obtained excellent results, is worthy of special mention, I think. It approaches a pruning hook, or, rather, two of them, in shape and, if for no other reason, should be useful to pilots or machines given to damaging their propellers on landing, as it is small in diameter, the tips being very much swept back towards the boss. Of its class, it came out top in some recent tests at the Eiffel laboratory. Allied to the L.U.C.T. it makes an excellent all-Italian power plant.—T. S. H.

A Sopwith Appointment.

The wisdom of the administration of the Sopwith Aviation Co. is shown by a recent appointment in that firm. Mr. Sidney F. Burgoine has been appointed assistant works manager, after having worked with the firm from the beginning of this year. Mr. Burgoine was for some time with Thornycrofts, Ltd., the well-known naval constructors, and prior to joining the Sopwith Co. was with Burgoine, Hampton Wick, Ltd., who are, of course, one of the most famous firms of launch and boat builders. Mr. Sidney Burgoine is a brother of Mr. A. C. Burgoine, whose article on waterplanes in the last issue of THE AEROPLANE caused considerable interest, and it is highly encouraging to see a firm whose chief experience is essentially in the building of aeroplanes strengthening their staff by the addition of one who is primarily a launch-builder.

Questions in the House.

Oral Answers, June 3rd, 1913.

17. Mr. Sandys asked whether, in view of the official refusal to give any information whatever with reference to the number of aircraft in the possession of the War Department, it is now the policy of the Government to withhold all such information from the House of Commons; and, if so, on what grounds this decision has been arrived at.

Colonel Seely: It is not the custom to publish detailed statistics of the present strength of personnel or materiel of the British Army. I hope to make a general statement on Thursday.

Mr. Sandys: In view of the fact that it is the policy of the Government to withhold information as to the number of aircraft in possession of the War Department, are we to understand the figures the right hon. gentleman gave the House on March 19th were not, as a matter of fact, correct?

Colonel Seely: It is the policy of the Government to withhold from the House no information that can properly be given to it, and I may say we have given more complete information to this House than has been given to the Assemblies in any foreign countries. The fullest information upon this and all other matters that can be given in the public interest will be given.

Mr. Harry Lawson: Can the right hon. gentleman issue a Return before he makes a statement, giving in their different classes the aircraft of the country?

Colonel Seely: Yes, sir. I am glad the question is asked, because I propose to issue a paper giving the fullest information possible, and such information as we have in regard to aeronautics.

Oral Answers, June 4th, 1913.

Hydro-Aeroplanes.

3. Mr. Burgoyne asked whether any decision has been arrived at regarding an official designation for naval hydro-aeroplanes; and, if not, whether he will consider "navyplane" as a suitable title.

Mr. Churchill: The suggestion is interesting, and will be considered with other alternatives.

Sir C. Kinloch-Cooke: Does the suggestion not rather suggest that the sea is always calm?

Mr. Churchill: The hon. member seems anxious to read more into the word than I have been able to do. I cannot see how the adoption of the new word regulates the character of the sea.

Mr. Lee: I hope the right hon. gentleman will not delay the provision of a sufficient number of these instruments until the name is supplied.

Fatal Accidents.

20. Sir Charles Hunter asked what number of fatal accidents have taken place among the Royal Flying Corps during the last year, and the number of officers and men engaged in that branch of the Service; and if he can state the number of officers and men in the French army engaged in the same service, and the number of fatal accidents during the past year.

The Secretary of State for War (Colonel Seely): During the past year there have been five fatal accidents, involving the loss of eight lives in the Military Wing, which, on May 13th, consisted of 74 officers and 682 men. From statements which have been made in the Press it appears that, in the same period in France, there have been thirteen fatal accidents, involving the loss of seventeen lives; the number of officers and men employed in the aeronautic branch of the French army amounts to 1,174.

Sir C. Hunter: Can the right hon. gentleman give any reason why there are so many more accidents than last year in our Service in proportion to the number employed?

Colonel Seely: I do not think the hon. baronet can have heard the figures I have given, or he would not have drawn that conclusion.

Mr. Lee: Is it not a fact that the number of accidents is over 10 per cent. of the number qualified?

Colonel Seely: From the information in my possession, to which I have given some attention, I believe we have had fewer fatal accidents in proportion to the number employed than other countries. Of course, I cannot be certain, because the figures are not published at all.

Aeroplanes (Designs).

21. Mr. Joynson-Hicks asked whether it is the intention of the War Office to confine orders for aeroplanes in future entirely to those built under contract to Government design, or whether, as is the custom in the Navy, promising machines of other designs will be bought and tested by officers of the Royal Flying Corps.

Colonel Seely: The reply to the first part of the question is in the negative, and to the second part in the affirmative.

Lieutenant Arthur's Death.

23. Mr. Joynson-Hicks asked whether the aeroplane upon which Lieutenant Arthur met his death on May 27th is of the same type as the machine which collapsed with Lieutenant de Havilland in April last; and, if so, what was the result of the inquiry, if any, into the latter accident.

Colonel Seely: The reply is in the negative.

Full Strength of Squadrons.

24. Mr. Joynson-Hicks asked whether the seventeen aeroplanes which flew before his Majesty the King last week represented the full strength available of Squadrons No. 3 and No. 4, Royal Flying Corps, with the addition of one belonging to Squadron No. 2.

Colonel Seely: The reply is in the negative.

Mr. Joynson-Hicks: Can the right hon. gentleman give us no information, except a negative reply, as to the proportion which came from the other squadron?

Colonel Seely: I think it would be better if we dealt with that matter in debate.

British-Built Aeroplanes.

25. Mr. Joynson-Hicks asked whether any of the seventeen aeroplanes which flew before his Majesty last week were of British build, other than those built in the Royal Aircraft Factory.

Colonel Seely: The reply is in the affirmative.

Military Wing.

26. Mr. Joynson-Hicks asked by what date it is expected that any one squadron of the Royal Flying Corps, Military Wing, will be brought up to the full strength of the establishment in personnel and materiel.

Colonel Seely: I am not prepared to state by what date the equipment of the squadrons of the Royal Flying Corps will be complete.

Mr. Joynson-Hicks: Will the right hon. gentleman answer the question whether at the present moment there is one single squadron properly equipped?

Colonel Seely: I propose to make a full statement to-morrow with regard to the Royal Flying Corps squadrons. To explain it now would take up a considerable time, and I think it would be more convenient to the House for me to make a statement to-morrow.

35. Mr. Sandys asked whether, on March 19th, 1913, the strength of the Royal Flying Corps, Military Wing, was 126 officers and 680 men, whereas on May 1st the strength was reduced to 76 officers and 651 other ranks; and, if so, on what ground the reduction in numbers has been made.

Colonel Seely: There has been no reduction in numbers. The figures given on March 19th included the officers under instruction and those in the Reserve and Special Reserve.

Mr. Lee: Does the number given now include only officers who have been passed as efficient pilots?

Colonel Seely: I do not quite know what the hon. member means by "now." I shall be glad to give him any information required. The difference is that in one case the figures asked for included the Special Reserve, and in the other case they did not.

Pilots' Certificates.

20. Colonel Yate asked whether, now that the Military Wing of the Royal Flying Corps has been on an established basis for some months, he will state what steps are taken to ensure that the flying officers possess a sound practical mechanical knowledge, apart from theoretical knowledge, before they are granted their pilot's certificate; and whether officers are expected and encouraged to diagnose and rectify simple causes

of engine failure such as sooted plugs, choked carburetter, or defective lubrication for themselves without handing over the faulty engine to the attentions of the skilled mechanics, which latter step means loss of time pending the mechanic's arrival and loss of experience to the pilot.

Colonel SEELY: All officers of the corps have a thorough mechanical knowledge. A practical knowledge of engines forms one of the subjects in the examination that all officers pass before graduating at the school. The reply to the second part of the question is in the affirmative.

Number of Non-Commissioned Officers and Men.

32. Mr. SANDYS asked for the numbers of officers, non-commissioned officers, and men of the Royal Flying Corps stationed at South Farnborough, Salisbury Plain, and Montrose, respectively.

37. Mr. AMERY asked how many aeroplanes are available for the use of the Royal Flying Corps at South Farnborough, Salisbury Plain, and Montrose, respectively.

Colonel SEELY: I will reply at the same time to Question 37. It is not considered to be in the interests of the public service to publish the detailed distribution of strength or materiel of any branch of the Army.

Cross-Country Flights.

33. Mr. SANDYS asked whether all expenses of officers or others engaged in cross-country flights are being defrayed by the Government; and whether all claims of expenses in connection with past cross-country flights have been now settled.

Colonel SEELY: The reply to the first part of the question is in the affirmative. As regards the second part of the question, nothing is known at the War Office of any outstanding claims.

Foreign Airships.

34. Mr. SANDYS asked for the numbers of airships owned, respectively, by the Governments of Germany, Austria, Italy, France, and Russia; the number of airships privately owned in those countries but available for Government use; the number of airship stations in Germany, France, and Italy; and the number of aeroplanes in possession of the Governments of France and Germany

Colonel SEELY: The information asked for is not published by foreign Governments.

Mr. JOYNSON-HICKS: Have the Intelligence Department no idea whether these figures are published or not?

Colonel SEELY: I should have thought that question would hardly have been asked by the hon. member. Obviously, the information obtained by the Intelligence Department ought not to be made public.

Extra Pay.

38. Mr. AMERY asked what extra pay is now being given to officers and men engaged in aviation work.

Colonel SEELY: The hon. gentleman will find the detailed information he requires in Army Order 131, of 1912, a copy of which I will gladly hand to him.

Royal Flying Corps.

22. Mr. JOYNSON-HICKS asked whether the Army branch of the Royal Flying Corps is now in possession of the 148 effective aeroplanes which he foreshadowed; and, if so, how many of them are English and how many are of foreign manufacture.

36. Mr. AMERY asked how many aeroplanes are at present in the possession of the War Department.

Colonel SEELY: I will reply at the same time to question No. 36. There have been considerable delays in delivery, and in consequence the total number of aeroplanes has not reached the number required owing to delays in delivery, which were considered possible, as indicated in my previous statement. The present numbers amount to 126, of which 69 are of English make. Of the 126, 31 are in various stages of repair.

31. Mr. SANDYS asked the number of airships at present in possession of the War Department.

Colonel SEELY: Three.

39. Mr. AMERY asked the date on which the first of the twenty officers who qualified as flying officers before the Central Flying School started obtained such qualification; and whether any alteration has been made in the tests since that date.

Colonel SEELY: The reply to the first part of the question is that on July 26th, 1910, this officer obtained the Royal Aero Club certificate. As regards the second part of the question, the military flying test is much more exacting than the Aero Club certificate.

40. Mr. STEWART asked whether an order was given in March last to an aeroplane firm to supply a number of aircraft, some of them of a very old pattern and others of an experimental type; if so, how many of these machines have since been flown and approved by the Royal Flying Corps; and how many have been condemned?

Colonel SEELY: Seven machines, some of which were not of the latest type but were considered to be very suitable for instructional purposes, were ordered from a firm in March. Of these four have been handed over to the Corps, two are under test at the factory, and one has been rejected and returned to the firm.

Mr. JOYNSON-HICKS: May I ask if these old machines were included in the total of 101 which the right hon. gentleman gave us some two months ago?

Colonel SEELY: Some of them are quite new. Some, at least seven of the machines to which reference is made, were considered specially suitable for instructional purposes, and all those machines were included, as I stated, in March last.

37. Sir J. D. REES asked whether any provision is made for appointing civilian aviators to the Royal Flying Corps; whether officers of the Army cannot be permanently appointed thereto; and whether it is impossible to appoint applicants for temporary attachment on probation to that corps because the number of aeroplanes is insufficient.

The FINANCIAL SECRETARY to the WAR OFFICE (Mr. Harold Baker): Civilians are appointed to the Royal Flying Corps for four years' service, either with the Reserve or with the Military Wing. It is not proposed at present to appoint officers of the Army to the Corps for more than four years. The number appointed is determined, amongst other considerations, by the number which can be thoroughly instructed at the Central Flying School.

Accidents.

41. Mr. STEWART asked the Secretary of State for War whether, at the inquiry into the fatal accident to Lieutenant Arthur, on Tuesday, May 27th, at Montrose, it was stated that there was an old fracture in the machine which had not been sufficiently repaired, and which was the cause of the accident; and, if so, whether he will take steps to cause a complete and regular examination to be made of all machines used by the Royal Flying Corps?

53. Mr. FELL asked what was the age and history of the aeroplane which collapsed at Montrose; how many flights had previously been made in it, and had it ever met with an accident or been damaged previously; and, if so, where were the repairs executed.

Colonel SEELY: I would refer the hon. gentleman to the reply which I gave to my hon. friend the member for Montrose Burghs on June 2nd.

Mr. FELL: Does that reply tell us the number of flights previously made on this machine which has broken down?

Colonel SEELY: It is a very full reply given with regard to the accident. I do not think we have any record of the number of flights made by each machine. I will inquire, but I should think probably we have not.

42. Mr. STEWART asked the Secretary of State for War whether his attention has been called to the report of the Royal Aero Club Committee on the accident which caused the death of Lieutenant Ropers-Harrison, in which it was stated that the aircraft had structurally deteriorated since it was originally built in 1911, and that its condition at the time of flight was precarious; and how many other machines now being used by the Royal Flying Corps, Military Wing, are in a similar condition.

Colonel SEELY: My attention has been drawn to this report, but it cannot be admitted that any machine which is in a precarious condition is allowed to be used by the corps. Every machine is most carefully inspected before a flight is made.

52. Mr. FELL asked if any aeroplanes in use by the War Office have been in accidents or been damaged and repaired; and, if so, how they are tested previously to flying to ascertain that there are no hidden flaws or weak spots in them resulting from the damage.

Colonel SEELY: Some of the aeroplanes in use have been

damaged in accidents and have been repaired. They are thoroughly tested previously to flying; the tests applied depend upon the amount of repair that has been found necessary.

Mr. Fell: Does not the right hon. gentleman consider that machines which have been broken up should not be repaired, but entirely destroyed?

Colonel Seely: It would be an absurd rule to make that any damage done should not be repaired. It would never be accepted anywhere. Of course, in the case of spars, where they are repaired they are stronger at that point than elsewhere. I can assure the hon. gentleman that the greatest care is taken in the matter.

Mr. Fell: Is there not a chance of flaws existing in machines that have been repaired, which would not be the case with new machines?

Colonel Seely: I do not think you could take that as a rule at all. I shall be glad to make a statement on the subject to-morrow, if the House cares to hear it.

Mr. F. E. Baron's Invention.

54. Sir J. D. Rees asked the right hon. gentleman whether his department has any knowledge of, or has given any encouragement to, Mr. F. E. Baron, who has invented an airship in the construction of which the characteristic faults of the Zeppelin type of ship are, he claims, corrected.

Mr. H. Baker: The proposals in question have been received and are at present under consideration.

Local Flying Corps (Liverpool).

55. Sir J. D. Rees asked the right hon. gentleman whether his connection with the Liverpool proposal for a local flying corps ended with his letter discouraging the movement which was read at the Lord Mayor of Liverpool's meeting; and what action, if any, has been taken by the supporters of the movement upon his letter.

Mr. H. Baker: The reply to the first part of the question is in the negative. The matter is under consideration.

War Office Orders.

56. Sir J. D. Rees asked whether an order for an airship has been placed by the War Office in Germany.

Mr. H. Baker: No, sir.

Oral Answers, June 5th, 1913.

Royal Flying Corps.

59. Major M'Calmont asked whether the three squadrons of the Military Wing of the Royal Flying Corps are provided with a sufficient number of serviceable aeroplanes to enable all their qualified pilots to practise flying daily, weather and other conditions being normal.

Colonel Seely: Owing to the delays in the delivery of aeroplanes by makers, which I have already mentioned to the House, the number of machines in possession of squadrons is not yet considered adequate

The Government Engine Competition.

Three months after the intention to institute a competition for aeroplane engines was made known, the War Office announces that a prize of £5,000 will be awarded after competition to the maker of the aeroplane engine which, in the opinion of the judges, shall best fulfil certain specified requirements, and shall possess certain desirable attributes, and which shall be entirely suited for the aeroplane service. The competition will begin on February 1st, 1914, and will be held at the Royal Aircraft Factory, Farnborough. The Judges Committee will be appointed by the Admiralty and the War Office conjointly. Orders up to the value of £40,000 in all will be given to the makers of engines which fulfil requirements and are satisfactory for use. The orders will not necessarily be confined to the prize-winner. Entrants of competing engines up to the number of ten which do not win the prize, but which, in the opinion of the Judges Committee are useful aeroplane engines, will receive £100 in respect of each engine.

The requirements to be fulfilled are as follows:—

Horse-power, 90 to 200.

Number of cylinders: to be more than four.

Gross weight per horse-power: calculated for six hours' run, not to exceed 11 pounds.

Shape of engine: to be suitable for fitting in an aeroplane.

Origin of engine: British manufacture throughout.

The following are considered to be desirable attributes of an aeroplane engine:

Light total weight.

Economy of consumption.

Absence of vibration.

Smooth running, whether in normal or inclined position, and whether at full power or throttled down.

Slow running under light load.

Workmanship.

Silence.

Absence of deterioration after tests.

Simplicity of construction.

Suitable shape to minimise head resistance.

Precautions against accidental stoppage, e.g., dual ignition.

Adaptable for starting otherwise than by propeller swinging.

Accessibility of parts.

Freedom from risk of fire.

Absence of smoke or of ejections of oil or petrol.

Convenience of fitting in aeroplane.

Relative invulnerability to small-arm projectiles.

Economy (in bulk, weight, and number) of minimum spare part equipment.

Excellence of material.

Reasonable price.

Satisfactory running under variations of temperature.

Tests.

1. Two runs of 6 hours each at full power or throttled down, as desired by the judges. Engines to be placed in inclined positions not exceeding 15 degrees for short special runs.

2. The consumption of fuel and lubricant will be measured.

3. Engines to be dismantled by the competitors' mechanics between the runs if desired by the competitors or by the judges, but no work of any kind to be done on an engine except under observation.

4. At any period during the competition the judges may impose such other tests as they may desire, including runs of longer duration, in order to bring out the relative merits of competing engines.

Communications in connection with the competition should be addressed to the Secretary to the War Office, Whitehall, before January 1st, and thereafter at an address to be notified to the competitors by the Secretary. Entries will be received by the Secretary of the War Office on or before Aug. 1.

Three months seem a long time to have been occupied in formulating a set of conditions which any working mechanic could have evolved in five minutes. Nothing is said about such important points as gearing down the propeller shaft to give higher efficiency nor half a dozen other points which a knowledgable motor mechanic could suggest.

One wonders whether about December next some fresh conditions will be imposed, or whether we shall be told that some of the "desirable attributes" do not matter, so that the rules may fit the experimental engine of "improved Renault" type now being built in the Royal Aircraft Factory, and whether after it is all over we shall be told that really the R.A.F. engine was better than anything in the competition. Experience of the Military Aeroplane Competition last August makes one suspicious.

Bristols in Germany.

The German officers at the Bristol School at Halberstadt have been doing very well of late. Two of them recently took their Military Superior Certificates in particularly good form.

On a 100-h.p. tandem mono, Lieut. Von Stoll made a cross-country journey over the Harz Mountains at 5,000 feet, covering a circuit of 200 km. in 2 hrs. 20 mins. (Halberstadt, Güsten, Mansfield, Hettstedt, Ochersleben, Quedlinburg, Halberstadt), and Lieut. Von Borcke made about the same circuit, but a little shorter, 155 km. in 1 hr. 27 mins., on a very gusty day, attaining 5,500 feet, his circuit being Halberstadt, Ochersleben, Quedlinburg, Harzburg, Blankenburg, Halberstadt.

The school and factory are going strong; 30 pupils (all military) are flying all types, from the sociable up to the 80-h.p. mono, and will soon be using the new tractor with 90-h.p. Mercédès six-cylinder engine, instead of a Renault, which M. Jullerot is now putting through its tests.

The Doomed Legion.

[According to Colonel Seely the duties of officers of the Royal Flying Corps are necessarily the most dangerous in the Service, and we are to be congratulated on having had so few fatal accidents.—*Vide* the daily Press.]

(With Apologies to Mr. Kipling.)

To the Legion of the Hopeless, to the Cohort of the Doomed,
  Sings a Pilot of the Royal Flying Corps,
A member of the *corps d'elite* a Minister has boomed
  For its everlasting readiness for war.
  Yes, a pilot of the sort the Flying School has thought
  Fit to turn a Renault engine inside-out,
And has handed to Headquarters to be more completely taught, as
Quite the latest kind of aeronautic scout.
  We're poor little pilots up in the sky,
  Poor little airmen ever so high.
  Little lost birdmen all at sea,
  Flying from here to Eternity.
  God ha' mercy on such as we
    Of the R.F.C.

Oh! It's sweet to wear a tunic without buttons down the front,
  Cut like the chaps' who drive Andover 'busses,
To keep our little tummies warm against the hailstorm's brunt
  —It's only us of whom they make such fusses.
Yes! It makes you mighty proud—and it isn't really loud—
  To be labelled with a pair of woolly wings.
For when your plastron bears 'em—and no other soldier wears 'em—
  You're the kind of chap of whom a poet sings.
  We're little white souls up ever so high,
  Seely has said so—now you know why.
  Members of *such* a heroic band,
  From Greenland's ice to India's strand,
  No one possesses quite so much "sand,"*
    As the R.F.C.

[*N.B.—"Sand," noun, uncommon, (American vernacular). Anglicé "bravery." Not the variety over which the Walrus and Carpenter wept.—ED.]

When you see the crocks we fly on, and the state they're often in,
  And their chronic state of wear and disrepair,
And half a dozen pilots turn and turn on one machine,
  Can you wonder we get bitter here and there?
When the perished fabric splits, or a wing-tip falls to bits,
  And you've seen your best friend planted in his grave,
While a Minister of State can only stand and prate
  Of the dangers of the men someone should save,
    Do you wonder what is the reason why
    Poor little birdmen up in the sky,
    Pilots all of the Flying Corps,
    Want machines just a trifle more
    Than special promotion or praise galore,
      For the R.F.C.?

We have done with "thin red heroes," and "bands of brave young men,"
  And their "opportunities for daring deeds,"
We want to see our death-rate rather less than one in ten,
  And aeroplanes sufficient for our needs.
If we'd someone worth respect who could come down and inspect
  Every 'bus we fly, and cut out all the wrecks too,
We should do a lot more flying and there'd be a heap less lying
  About what's good enough to trust our necks to.
    Then we should feel when ever so high,
    Certain enough we weren't going to die,
    Flying in hopes of living to see
    Something better than any "B.E."
    Or "warplanes" out of the Factory,
    Approved in type by the D.M.T.
    And ordered in heaps for the R.F.C.

—C. G. G.

[N.B.—The Inspector of Aeroplanes on service, recommended by the Monoplane Committee in their report dated December 4th, 1912, has not yet been appointed.]

In Memory of Desmond Arthur.

The many friends in Limerick of the late Mr. Desmond Arthur have decided to raise a memorial to him in that city, and the following letter has been sent to the Press:—

"Sir,—The friends of this gallant young officer, who met his death under such exceptionally tragic circumstances while flying at Montrose on 27th ult., have decided that a suitable memorial should be raised to one who died doing his duty. With this object in view, a meeting was held on 4th inst. at the Chamber of Commerce, Limerick, under the presidency of Mr. M. W. Gavin, High Sheriff of Co. Limerick. A representative committee was formed, and the following resolution adopted:—'That subscriptions be unlimited, and that names of subscribers, but not amounts, be published.' Subscriptions will be received and acknowledged by

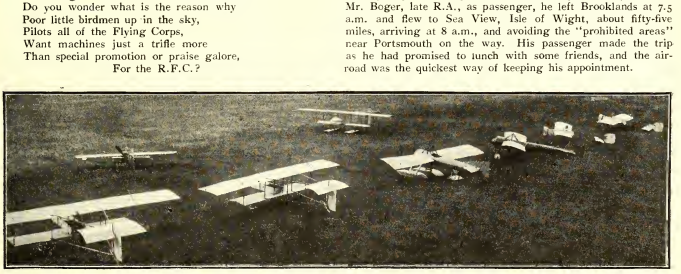
"F. A. JOHNSTON, Hon. Sec.
"T. G. STUDDERT, Hon. Treas.

"County Club, Limerick, 5th June, 1913."

All Irish readers of THE AEROPLANE are invited to contribute.

A Good Cross-Country Trip.

On Monday morning Mr. Harry Hawker made a good cross-country trip on a Sopwith tractor (80 h.p. Gnome). With Mr. Boger, late R.A., as passenger, he left Brooklands at 7.5 a.m. and flew to Sea View, Isle of Wight, about fifty-five miles, arriving at 8 a.m., and avoiding the "prohibited areas" near Portsmouth on the way. His passenger made the trip as he had promised to lunch with some friends, and the air-road was the quickest way of keeping his appointment.



A SQUADRON OF THE MAKE-BELIEVE.—The scale model Henry Farmans, Deperdussins, and Blériots used in the Battle of Earl's Court. The models were made by Mr. Stevenson, of Richmond, and are worked by apparatus designed by him. Incidentally, they are quite as useful as many of Colonel Seely's 120 aeroplanes.

The Royal Aero Club.

At the Committee Meeting on the 3rd inst., the following Aviators' Certificates were granted:—493, May 26th, 1913, Pierre Gandillon (Blériot monoplane, Blériot School, Hendon). Subject to permission of the Aero Club of Switzerland. 494, May 27th, 1913, Lieut. William Charles Hicks, R.N. (Caudron biplane, Ewen School, Hendon). 495, May 29th, 1913, Lieut. Gordon Adams (South Lancashire Regt.) (Short biplane, Central Flying School, Upavon). 496, May 29th, 1913, 2nd Lieut. A. A. Allen Knight (Royal Munster Fusiliers) (Vickers biplane, Vickers School, Brooklands). 497, May 29, 1913, Capt. Francis Stuart Wilson, R.M. (Bristol biplane, Bristol School, Brooklands). 498, June 2, 1913, Lieut. Ambrose Gratton Power (Royal Munster Fusiliers) (Grahame-White biplane, Grahame-White School, Hendon). 499, June 2, 1913, Lieut. Malcolm Wallace Duncan, R.A. (Bristol biplane, Bristol School, Brooklands).

The Committee had under consideration the refusal of the Home Office to grant exemptions under the Aerial Navigation Regulations to competitors taking part in the "Daily Mail" £5,000 Prize, the Aerial Derby, and the Hurlingham Balloon Contests. It was decided to request the chairman, the Marquess of Tullibardine, M.V.O., D.S.O., M.P., to approach the Home Secretary with a view to receiving a deputation from the Club on the subject.

The Scottish Aeronautical Society.

The fourth annual general meeting of the Scottish Aeronautical Society was held recently in the Engineers' and Shipbuilders' Institution, Elmbank Crescent, Glasgow, Professor Sir J. H. Biles, LL.D., presiding. The chairman drew attention to the efforts of the Society to promote an aerodrome in Scotland. They had negotiated with the Clyde Navigation Trustees to secure the use of their ground at Shieldhall. This ground (over 200 acres) was very suitable, but the Trustees had found it necessary to use the ground for their own purposes, and the project fell through.

He outlined the efforts of the Society to assist aviation in Scotland and to introduce the industry. He drew attention to engine construction which, in a large centre like Glasgow, so closely identified with engineering, seemed to be suffering from neglect.

Messrs. John MacGill, J. Clinkskill, and T. Logan were re-elected to the council.

Concerning Martinsydes.

Messrs. Martin and Handasyde wish to deny a rumour which has been freely circulated recently that a gentleman well known in connection with motor-cars has joined their firm as a partner. No alteration has been made in the constitution of the firm recently, nor is such an alteration in contemplation, notwithstanding a paragraph which has appeared elsewhere to this effect.

The Aerial Navigation Act and Flying Contests.

The Executive Committee of the National Aerial Defence Association at a special meeting held on June 4th at Lord Blyth's house, 33, Portland Place, took into consideration the provisions of the Aerial Navigation Act as affecting aerial competitions having for their object the awakening of National interest and the promotion of individual proficiency in the air of flying, and adopted unanimously the following resolution:—

"Without raising any question as to the principle which underlies the Aerial Navigation Act the Executive Committee of the National Aerial Defence Association desires emphatically to point out that the operative provisions of the Act as at present administered tend seriously to restrict the development of the British aircraft industry; and earnestly appeal to his Majesty's Government to modify the existing regulations so as to permit British pilots to fly over such parts of prohibited areas as may be necessary for aerial competitions calculated to promote the enlarged production of aeroplanes and hydro-aeroplanes and to stimulate public interest in aircraft for defence purposes."

The Committee expresses a sincere hope that the Press of the country will strongly support it in making this demand upon the Government.

The National Aerial Defence Association.

On the invitation from the Association to nominate three representatives of the Royal Aero Club to join the Executive Committee of the Association, the following have been appointed: The Chairman (the Marquess of Tullibardine, M.V.O., D.S.O., M.P.), the Vice-Chairman (Colonel H. C. L. Holden, C.B.), and Mr. Roger W. Wallace, K.C.

Public Landing Grounds.

Apropos public landing grounds, Major Lindsay Lloyd, the manager of the Brooklands Aerodrome points out that Brooklands is a public landing ground in the truest sense of the word, in that no charge whatever is made to aviators landing there and stopping the night, nor is any charge made if it is necessary to stop even for a longer period in order to repair a machine. Under such circumstances Brooklands people can certainly claim to exist pro bono publico.

A New Avro Director.

Owing to the severe illness of Mr. James Grimble Groves, who recently acquired a large interest in A. V. Roe and Co., Ltd., this gentleman is unable for the time being to attend to business. Consequently, the board of A. V. Roe and Co., Ltd., has been strengthened by the addition of Colonel John Groves, 5th Cheshire Regiment, who is a brother of Mr. James Groves. All who know Mr. James Groves will wish him an early and complete recovery, for such good sportsmen as he is can ill be spared from British aviation.



The latest Sopwith tractor, with balanced ailerons, which has been flying admirably at Brooklands.

The Handing-over of "Britannia."

The Imperial Air Fleet Committee certainly goes the right way to work to get itself known to the world at large, which is natural when one reads the list of the Committee and sees some of the smartest business men in London among them. Mr. Hamel's flight to Cologne, the christening of the machine at Hendon, and finally the official handing over of the "Britannia" to New Zealand at a very entertaining dinner last Thursday, are they not written in the chronicles of the daily press, that who runs may read? With Lord Desborough in the chair, and a whole table-full of notabilities on either side of him, the famous Blériot was publicly presented to the representatives of the New Zealand Government, and a number of patriotic speeches were made. Most notable was that of the Hon. Arthur Stanley, M.P., who remarked that even if Colonel Seely had the 140 and odd aeroplanes he claimed to have (Mr. Stanley's tone indicated doubt, one regrets to say), the number was ludicrously inadequate. Sir James Coward, who, one gathers, made the purchase of the "Britannia" financially possible, showed in his speech that some business men have Imperial ideas. Sir Joseph Ward, ex-Premier of New Zealand, gave the colonial view. And various others spoke well and unwell.

Medals were presented to Mr. Hamel, who gave a brief, lucid, and modest account of the Cologne flight, and to his passenger, Mr. Dupree, who rhapsodised humorously and at length over Mr. Hamel, and cinematograph films were shown of various incidents connected with the journey. Mr. Hamel was also presented with a wonderfully perfect model of the 80-h.p. Blériot made to scale by Mappin and Webb, Ltd., for the proprietors of Shell Spirit.

One may assume that the intentions of the Imperial Air Fleet Committee in organising the flight were to demonstrate the urgent need of developing everything connected with aviation in this country, by showing that what could be done from England could be done to England. Hence the cosmopolitan constitution of the flight, which is shown thus:—

Aeroplane, Blériot.—French.
Engine, Gnome.—French.
Fuel, Shell Spirit.—Dutch Sumatran.
Pilot, Mr. Hamel.—Scandinavian
Passenger, Mr. Dupree.—Franco-American.
Flight Manager, M. Chéreau.—French.
Mechanics in charge.—French.

Also, I think I am correct in stating—I apologise if I am not—that the moving spirit of the enterprise was Mr. Rosenthal, of the "Standard," who presumably is of German origin.

At the moment I can trace nothing of Spanish, Italian, Hungarian, or Slav origin among the component parts, and so far as I can find the only thing really English about it was the money which paid for everything. Viewed in this light the flight is certainly a very useful lesson.—C. G. G.

Progress at Shoreham.

The flying at the aerodrome is improving day by day in quality as well as quantity. The Avro School, now under new management, has three school machines and is expecting a new 50-h.p. Gnome shortly. Mr. Shaw, from Farnborough, has joined the numerous pupils, all of whom are making good progress, Mr. Rolshoven in particular.

The assembling and testing of the new 100-h.p. waterplane has been watched with great interest and, on its trials, the machine seems an immense success. The rumour that she is underpowered has no foundation, and the way Mr. Raynham handled her when he flew to Brighton recently was a delightful demonstration of what can really be done by a good pilot on an efficient machine.

On Tuesday last week Mr. Raynham flew a sister machine from Eastchurch to Shoreham. This is fitted with wheels and is intended for land work. [It is, presumably, the machine originally intended for the Navy.—Ed.]

Military officers, when flying across country, seem very fond of calling at Shoreham en route and are always extended a very warm welcome. Late visitors include Capt. Dawes, Lieuts. Ashton and Chinnery—all of the R.F.C.—and Lieut. Lushington, R.M.A., from Eastchurch.

Mr. Fieldwick is assembling an ancient Blériot which he has bought from the Eastbourne Aviation Co. The machine looks still capable of useful service and should be out shortly.

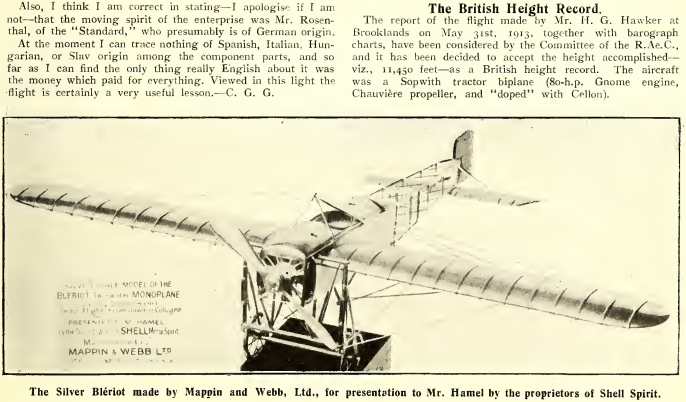
Another visitor of note has been Lieut. Porte, R.N., from Hendon, on his 100-h.p. Deperdussin, who arrived at Shoreham last week. He left on Thursday for Portsmouth and Salisbury, but returned on Sunday without having gone to Salisbury, owing to delays caused by a burst petrol-tank.

Mr. Eric Pashley is up every day carrying passengers, and has lately visited Brighton, Worthing, and Bognor. He is to pay a return visit to the latter town on Saturday next. From his arrival dates the marked improvement in the flying at the aerodrome, for he is exceptionally hardworking, and his enthusiasm is most catching.

Every shed is now full at Shoreham, for the Radley-England waterplane has been brought back to the aerodrome for repairs after its recent mishap at Brighton, and on every hand are signs of bustle and activity. Altogether, prospects are much brighter, and there is no reason, if the improvement is maintained, why Shoreham, ideally situated as it is, should not become one of the most popular aerodromes in England.
—Eric Leslie Dowse.

The British Height Record.

The report of the flight made by Mr. H. G. Hawker at Brooklands on May 31st, 1913, together with barograph charts, have been considered by the Committee of the R.Ae.C., and it has been decided to accept the height accomplished—viz., 11,450 feet—as a British height record. The aircraft was a Sopwith tractor biplane (80-h.p. Gnome engine, Chauvière propeller, and "doped" with Cellon).



The Silver Blériot made by Mappin and Webb, Ltd., for presentation to Mr. Hamel by the proprietors of Shell Spirit.

Flying at Hendon.

Saturday.

With characteristic perversity the weather was offensive on Saturday. It did not rain or snow, perhaps, but a high north-west wind prevented the programme being carried out in full. The speed event was abandoned and the cross country race to Elstree and back twice was halved in length. The pilots had simply to circle the reservoir once and return to the aerodrome. The entrants were M. Nardini, Deperdussin monoplane (50-h.p. Gnome) who won, M. Verrier, Maurice Farman biplane (70-h.p. Renault), who was second, M. Noel, Maurice Farman biplane (70-h.p. Renault), and Mr. Brock, Deperdussin monoplane (35-h.p. Anzani). The latter pilot gave up at Elstree as his machine was not high-powered enough to withstand the heavy gusts of wind.

Mr. Gustav Hamel tested a new Blériot monoplane (50-h.p. Gnome), and passenger flights were given by MM. Verrier and Noel on Maurice Farman biplanes. The King of Buganda was present with his suite and watched proceedings with great interest. A cinematograph company with uncouth villains and still stranger heroes constructed in full sight of a somewhat puzzled public a scene of an apparently bloodthirsty drama. And so the day passed in happiness and content.—W.

Sunday.

Despite the gale on Sunday Mr. Hamel went off to keep his engagement at Brooklands. His new Blériot is a good deal faster than his old one, but although he left Hendon at 11.45 a.m. he did not reach Brooklands till 1.25 p.m., having taken an hour and forty minutes to cover the 20 miles. Three several times he was blown clean on to the ground, and many times he was dropped a couple of hundred feet at a time. Over Osterley Park he only just missed landing on a tree, and at Sunbury he remained on the ground five minutes before he could go on. Also he was very air-sick, but despite that unpleasant fact he did his show at Brooklands and came back to Hendon, where he did a glorious spiral of about 2,000 feet, the return journey taking about 26 minutes, owing to the wind having gone round to the north-west.

Messrs. Verrier and Noel on the Maurice Farmans took up a number of passengers in the evening, Mr. Cheeseman flew pluckily on the old G. W. box-kite, and Mr. Manton tested the new G. W. school biplane, which, however, has to be altered somewhat; Mr. Temple also turned out on his little Caudron and flew quite well, so the quite reasonably large crowd had an excellent show.

The "Prince Henry" Winner.

The Prince Henry Reliability Flight was flown under conditions as near to those of war as possible.

The start was made on May 10th and the flights finished on May 17th, the distance covered being 677 miles. There were 39 starters, all fine flyers, both men and machines. Victory came to Lieut. von Hiddessen on a D.F.W. monoplane (100-h.p. Mercédès), carrying a useful load of 450 lbs., and starting off each time with fuel for four hours.

Lieut. von Hiddessen's performance appears to have been something of a triumph for everybody concerned; in the first place this is the first occasion on which the German Aircraft Works have entered one of their machines in an important competition, and in the second place, during the final 186 mile stretch, which had to be covered in a single flight, Lieut. von H. was the only aviator to reach his destination on the same morning, leaving behind him a trail of less fortunate competitors whose machines—to quote a vivid local narrative—"lay strewn along the whole route," their chassis broken for the most part by forced landings in boisterous weather; even the stable and "lazy" D.F.W. monoplane pitched and rolled fearsomely, but always regained its correct attitude, a tribute both to the machine and to the skill of the lieutenant, who had only flown the D.F.W. a fortnight.

Although, during his five hours' battle, zig-zagging along the 300-kilometre course, the pilot was sorely tempted more than once to attempt a landing, when he saw the fate of one competitor after another; he determined very pluckily that if his chassis must go, it should go on the far side of the winning post. As a matter of fact, he accomplished a fine landing without damaging the machine at all.

To the Reliability Flight were attached three reconnoitring flights, in each of which an observer had to make a military report, on the merits of which the "Kaiser Prize" was allotted. Lieut. von Hiddessen stood a fine chance of winning this competition as well but, unfortunately, in landing during the final flight he damaged a wheel, and although the repair would have taken only an hour, the troops employed would have departed by that time; thus by sheer bad luck he was out of the competition.

The Deutsche Flug-apparat Werke, who built the machine, is a comparatively new concern, and with them is associated Mr. Cecil Kny, formerly of Mulliners, in the days when that firm essayed aeroplane work. To Mr. Kny we are indebted for the above particulars and the photograph.



Lieut. Von Hiddessen, winner of the Reliability Prize in the Prince Henry Circuit, on his D.F.W. monoplane.

THE ROYAL AERONAUTICAL SOCIETY READING ROOM.

The Week's Work.

MONDAY, June 2nd.

R.F.C. Central Flying School.—Fine, clear. Freshening S.W. wind early, strong during day. On Avro 430, Mjr. Fulton with Lt. Brodribb 30 mins; Lt. Small 25 mins; Lt. Picton Warlow 30 mins. On Avro 432, Lt. Wanklyn 50 mins over Bulford, etc.; A.M. Higginbottom with Sgt. Jarvis 35 mins, with Sgt. Jarman 35 mins, with A.M. Baldock 40 mins; Lt. Hordern 25 mins; Lt. Shekleton 30 mins. On Avro 433, Lt. Todd 45 mins; Lt. Shekleton 15 mins; Lt. Mills 30 mins; Mjr. Fulton with Lt. Maude 75 mins, with A.M. Clarke 10 mins.

On M. Farman 403, Lt. Pretyman 15 mins; Lt. Gaskell 52 mins for brevet, in good style; Lt. Shepherd 5 mins; Lt. Wilson 24 mins; Lt. Noel 43 mins; Lt. Cutler 22 mins; Lt. King 23 mins; Lt. Shepherd with Lt. Noel 6 mins.

On M. Farman 411, A.M. Collis with A.M. Turner 20 mins, with A.M. Smith 10 mins, with A.M. Savill 63 mins, with P.O. Tigrphst. Hogan 17 mins, with Tigrphst. Stirling 23 mins; Lt. Gill 90 mins; Lt. Shepherd 8 mins; Lt. Bourke 18 mins.

On M. Farman 418, Lt. Shepherd with Lt. Wilson 7 mins, with Lt. Sitwell 5 mins; Lt. Sitwell 26 mins.

On M. Farman 427, Lt. Noel 29 mins; Lt. Cutler 18 mins; Lt. Bourke 17 mins; Lt. King 12 mins; Lt. Shepherd 8 mins; Lt. Wilson 21 mins; Lt. Pretyman 33 mins.

On M. Farman 426, Cpt. Salmond with Cpt. Fawcett 45 mins, with St. Porter 17 mins; Cpt. Fawcett 31 mins; Lt. Harvey-Kelly 20 mins.

On M. Farman 431, Mjr. Trenchard 73 mins; Engr. Lt. Randall 62 mins; Asst.-Pymr. Lidderdale 22 mins.

On B.E. 416, Lt. Stopford with P.O. Grady 100 mins; Lt. Morgan 15 mins; Lt. Edmunds 16 mins; Lt. Newall 15 mins.

On B.E. 417, Cpt. Salmond 5 mins alone, with Lt. Rodwell 15 mins; Cpt. Hoare 34 mins; Lt. Rodwell 15 mins; Lt. Fowler 8 mins; Lt. Birch 23 mins; Lt. Newall 18 mins; Lt. Stopford with Lt. Harvey-Kelly 16 mins.

On B.E. 449, Cpt. Salmond 22 mins; Mjr. Gerrard with A.M. Strugnell 16 mins.

On Short 402, Mjr. Gerrard with Ch.M. Pack 6 mins, Ch.M. Pack 25 mins, then for brevet, in excellent style. Flying time 12 mins each half. Mjr. Gerrard with Ch.M. Pack 3 mins, back to sheds, with Lt. Agar 28 mins. Lt. Adams 15 mins; Lt. Stopford with Ch.M. Scott 15 mins.

On H. Farman 412, Mjr. Gerrard 15 mins. Capt. Wildman-Lushington R.M.A. with Ldg. Smn. Daniels arrived about 5 p.m. on Short biplane (S 38 type) from Farnboro', having flown Eastchurch—Brighton—Portsmouth—Farnboro'. This is one of latest type Short "buses," and appears very good.

R.F.C., Farnborough.—Lt. Gould on M. Farman 356 15 mins, with Mjr. Bridges 20 mins on M. Farman 357. On M. Farman 305, Cpt. Reynolds 15 mins; Mjr. Raleigh on same 5 mins; Cpt. Board 20 mins; Lt. Gould with Cpt. Board 20 mins; Mjr. Raleigh on B.E. 201, three flights.

R.F.C., Montrose.—Early flights by Sgt.-Mjrs. Fletcher and Measures, and Sgt. Mead on M. Farman. Cpt. Longcroft, Lt. Waldron and Lt. Lawrence on B.E.s. Cpt. Herbert on M. Farman. Cpt. Harvey and Lt. Martyn as observers.

Hendon.—AT GRAHAME-WHITE SCHOOL.—Mr. A. G. Power fig. 8's on brevet machine. Lt. Evill straights with Instr. Noel. Messrs. A. G. Power and R. H. Carr took brevets. Lt. Boddam-Whetham rolling on No. 7, with Instr. Manton and alone.

AT W. H. EWEN SCHOOL, on 35-h.p. Caudron No. 2, M. Baumann with Lt. Bewes. M. Baumann to 3,000 ft. Mr. Turner on new 45-hp. Caudron.

AT BLERIOT SCHOOL, Mr. F. M. T. Reilly took first halt of brevet.

AT DEPERDUSSIN SCHOOL, Lt. Porte, R.N., on 100 h.p., alone, and with Cpt. Halahan at 1,500 ft.

AT TEMPLE SCHOOL, Mr. G. L. Temple on Caudron for 25 mins.

Brooklands.—AT VICKERS SCHOOL.—Mr. Knight (pilot) and Messrs. Andreae, Mitchell and Orr Paterson straights on No. 2 mono. Mr. Barnwell on biplane with Cpt. Balfour. Messrs. Knight, Mitchell and Barnwell on No. 3 mono.

AT BRISTOL SCHOOL, Mr. Merriam test and with Mr. Powell. Lt. Duncan for second half brevet in excellent style. Lt. Noott and Mr. Merriam alone. In afternoon Mr. Merriam test and with Mr. Liche (prospective pupil), Cpt. Shott (new pupil). Lt. Noott and Messrs. Powell and Skene 8's at 300 ft.

Salisbury Plain (BRISTOL SCHOOL).—Lt.-Col. Hamilton, Lt. Burns, Messrs. Adams, Gipps, and Delaplane alone. Mr. Pizey on Bristol "sociable" tuition to Mjr. Hewetson, Messrs. Gipps, Garnett, and Delaplane. Mr. Pixton on "Bristol" 80-h.p. mono with Mr. Garnett. Mr. Pizey with Lt. Dilworth (prospective pupil). Mr. Pizey in evening with prospective pupil. Lt. Griffiths (after six weeks away) long flight alone, hat blown off and cut in two by propeller, the latter not damaged. Mr. Pizey with Mr. Garnett in side-by-side mono. Mr. Pixton first trip to Lt. R. E. Orton. Mr. Pizey in 80-h.p. mono, with Mjr. Hewetson. Lt.-Col. Hamilton alone.

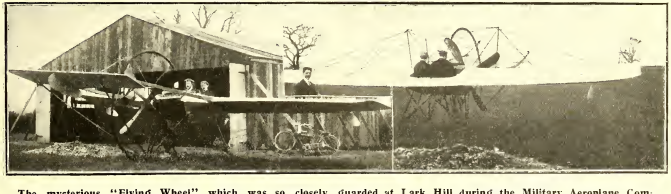
Windermere (LAKES FLYING CO.).—Mr. Trotter on Mr. Gnosspelius's hydro-monoplane.

Brighton Shoreham.—AT AVRO SCHOOL.—Mr. Shaw, Avro (35 h.p. Green) straights 45 mins.

TUESDAY, June 3rd.

R.F.C. Central Flying School.—Moderate S.W. wind. Fine, clear, and bright. On Avro 430, A.M. Higginbottom with Sgt. Jarman 25 mins, with A.M. Baldock 35 mins, with A.M. Clarke 15 mins; Lt. Picton Warlow 30 mins; Lt. Small 30 mins at 2,500 ft; Lt. Brodribb 8 mins. On Avro 432, Mjr. Fulton with Lt. Brodribb 45 mins, with Lt. Maude 60 mins; Lt. Brodribb 23 mins; Lt. Todd 30 mins; Lt. Hordern 25 mins at 3,600 ft; Lt. Mills 30 mins; A.M. Higginbottom with Sgt. Jarvis 15 mins, with A.M. Baldock 10 and 20 mins, with A.M. Butcher 15 mins; Sgt. Jarvis 15 mins alone. On Avro 433, Lt. Wanklyn 45 mins, with A.B. Townsend 40 mins; Cpt. Massy 40 mins. On Avro 448, Mjr. Fulton with Lt. Reilly 60 mins, with Lt. Morgan 10 mins, with Lt. Maude 30 mins; Lt. Reilly 25 mins; Lt. Morgan 10 mins

On M. Farman 403, Lt. Shepherd with Lt. Sitwell 9 mins, with Lt. Wilson 5 mins; Lt. Sitwell 50 mins for brevet, in fine style; Lt. Gaskell 31 mins; Lt. Gill 69 mins; Lt. King 8 mins; Lt. Noel 22 mins; Lt. Bourke 35 mins. On M. Farman 411, A.M. Collis, with Lt. Wilson 8 mins, with A.M.



The mysterious "Flying Wheel" which was so closely guarded at Lark Hill during the Military Aeroplane Competition is here shown completed. Comment is reserved until it flies in public.

Smith 8 mins, with A.M. Savill 20 mins, with P.O. Tigrphst. Hogan 6 mins; Lt. Bourke 22 mins; Engr. Lt. Randall 7 mins; A.M. McNamara 20 mins; Lt. Wilson 23 mins; Lt. Shepherd with A.M. Savill 22 mins, with R.A. Case 28 mins. On M. Farman 427, Lt. Wilson 10 mins; Lt. Shepherd 6 mins alone, with Lt. King 13 mins; Lt. Cutler 30 mins; Lt. Preynaan 41 mins; Lt. Sitwell 9 mins; Lt. Shepherd with Lt. Patterson 8 mins.

On M. Farman 426, Cpt. Salmond 22 mins alone, with Sgt. Porter 20 mins; Cpt. Fawcett 85 mins; Lt. Fowler 10 mins, Lt. Harvey-Kelly 12 mins. On M. Farman 431, Mjr. Trenchard 28 mins; M. T. O'Connor 57 mins; Asst.-Pymr. Lidderdale 50 mins; Engr. Lt. Randall 55 mins.

On "B.E." 416, Lt. Rodwell 38 mins; Lt. Birch 37 mins; Lt. Stopford 13 mins alone, with Sgt. Rigby 40 mins, with Lt. Harvey-Kelly 15 mins; Lt. Morgan 22 mins; Cpt. Hoare 18 mins; Cpt. Salmond with Cpt. Massy 45 mins. On "B.E." 417, Lt. Edmonds 41 mins; Lt. Fowler 38 mins; Lt. Morgan 31 mins; Cpt. Hoare 24 mins; Cpt. Salmond 5 mins; Lt. Newall 16 mins. On "B.E." 449, Cpt. Salmond 16 mins; Lt. Stopford 12 mins.

On Short 402, Mjr. Gerrard with Ldg.Smn. Barnshaw 20 mins, with Lt. Hathorne 35 mins, with Lt. Kershaw 20 mins, with Lt. Fuller 30 mins; Lt. Vaughan 42 mins; Lt. Adams 32 mins; Lt. Fitzmaurice 15 mins; Lt. Kershaw 15 mins. On H. Farman 412, Mjr. Gerrard with Lt. Mapplebeck 33 mins; Lt. Stopford 15 mins; Lt. Mapplebeck 32 mins. On H. Farman 444, Mjr. Gerrard with Lt. Fitzmaurice 8 mins; Lt. Stopford 20 mins; Lt. Mapplebeck 20 mins.

Cpt. Lushington and passenger, on Short 38, left school for Farnboro' at 10 a.m.

R.F.C., Farnborough.—King's Birthday Parade—twelve machines flew past. Later Lt. Gould with Lt. Playfair on M. Farman 305, 5 mins, and two of 5 and 10 mins. Mjr. Raleigh on "B.E." 201. Also some rolling on Laffan's Plain.

Hendon.—At Grahame-White School.—Lts. Moore, Evill, Eales, and Boddam-Whetham under Instr. Noel. Sir A. Sinclair and Lt. Moore straights. Mr. H. E. Russell (new pupil) rolling with Instr. Manton and alone.

At W. H. Ewen School, on 35-h.p. Caudron No. 1, Mr. L. Turner with Mr. F. W. Goodden. Mr. Goodden took brevet. On 35-h.p. Caudron No. 2, M. Baumann with Lt. Bewes and Messrs. C. George, Pendlebury, Jagenberg, Cowling and Prosser. On 35-h.p. Caudron No. 1, M. Baumann with Messrs. W. Warren and H. Gist. M. Baumann on 60-h.p. Caudron, to 2,000 ft.

At Depperdussin School, on No. 3 Mr. Hudson circuits and 8's followed by brevet, passed well. First flight 250 ft., landing dead on mark. Second flight 350 ft., very small neat eights. Mr. Bauman at 150 ft. circuits and 8's. Lt. Brock, Col. Smyth, and Mr. Jacques on No. 2 straights. Mr. Bauman on No. 3 circuits on 8's, then took brevet in good style. Lt. Porte on 100 h.p. with Mr. Hudson then Lt. Brock.

At Temple School, Mr. G. L. Temple on Caudron; Lt. Ambler, Messrs. Penny, Ritchie, Lance, Vaile 10 mins each straights. In evening G. L. Temple alone, and Messrs. Ambler, Vaile, Penny and Ritchie 10 mins each.

Brooklands.—At Vickers School.—On biplane, Mr. Barnwell with Cpt. Balfour, Mr. Mitchell and Mr. Beevor alone. Mr. Knight with Mr. Beevor. Messrs. Barnwell, Orr Paterson, and Mitchell on No. 2 mono. Mr. Barnwell with prospective pupil on biplane.

At Bristol School, Mr. Merriam and Lt. Noott alone. Mr. Bendall with Cpt. Shott and Mr. Skene. Mr. Merriam with pupils, Mr. Harris alone. 5.30 p.m. Mr. Bendall test, then with Messrs. Powell, Skene, and Howard. Mr. Merriam with Capt. Shott, Messrs. Powell and Skene. Mr. Harris straights. Lts. Noott and Morgan 8's. Mr. Merriam and Bendall up till too dark for flying.

Salisbury Plain (Bristol School).—Lt.-Col. Hamilton, Lt. Burns, Lt. Priestley, R.N., Messrs. Adams and Delaplane alone. Mr. Pizey in side-by-side monoplane with Lt. Orton and Mjr. Hewetson. Latter first solo in this machine. Lt. Griffiths, R.A., for brevet at good height. Mr. Pixton on 80 h.p. mono, with Mr. Garnett, and in evening with Mr. Welshman (prospective pupil), and Lt. Osmond. Mr. Delaplane for certificate, but landed with engine trouble, then on another machine and took first half in good style.

Mr. Pixton on 80 h.p. with Mr. Garnett. Lt.-Col. Hamilton, Lt. Priestley, R.N., Messrs. Gipp and Adams alone, latter 8's at 700 ft. Mr. Pizey with Lt.-Col. Hamilton and Lt. Orton.

Nottingham.—Mr. B. C. Hucks on Blériot arrived from Spalding. Flat calm, but very bumpy journey.

Brighton-Shoreham.—At Avro School.—Mr. Shaw, Avro (35 h.p. Green), straights 30 mins. Mr. Raynham arrived from Eastchurch on 100 h.p. Avro biplane similar to waterplane but with a land chassis. Mr. Peshley on Blondeau-Hewlett, circuits.

Windermere (Lakes Flying Co.).—Mr. Trotter on Mr. Gnosspelius's hydro-monoplane.

WEDNESDAY, June 4th.

R.F.C. Central Flying School.—Freshening S.E. wind, changing to S.W., and very strong during day. On B.E. 449, Cpt. Salmond with Lt. Stopford 50 mins, to Newbury and back.

R.F.C., Farnborough.—Lt. Gould on M. Farman 357, 10 mins. Lt. Gould with Gent.-Cadet Hollis 10 mins. Cpt. Reynolds with Gent.-Cadet Harding 8 mins.

R.F.C. Montrose.—Lt. Waldron with Cpt. Harvey and Lt. Lawrence with Lt. McLean to Forfar on B.E.s. Cpt. Herbert with Lt. Read as observer to Oathlaw on B.E. Cpt. Longcroft on M. Farman with Lt. Cull, R.N., of 7th Submarine Flotilla.

Hendon.—At Grahame-White School.—Lt. Moore straights with Instr., followed by Lts. Boddam-Whetham and Eales. Lt. Evill straights. Mr. Russell, rolling and straights with Instr. Cheeseman.

At W. H. Ewen School, 4.30 a.m., M. Baumann test. On 35-h.p. Caudron No. 1, M. Baumann with Lt. Bewes and Messrs. George, Jagenberg, Pendlebury and Cowling. Mr. Prosser alone. M. Baumann on 60-h.p. Caudron to 3,000 ft. 7.30 a.m. on 35-h.p. Caudron, M. Baumann with Messrs. C. George, F. Goodden, N. Cowling and Lt. Bewes. Mr. Sydney Pickles on 60-h.p. Caudron to 7,000 ft.

At Depperdussin School, in morning on No. 2, Mr. Jaques 15 mins; Mr. Murray 15 mins. In evening, on No. 3, Col. Smyth and Lt. Brock. Lt. Porte R.N., on 100-h.p. with Mr. Brock to Brighton against very strong head wind in 1¾ hrs.

At Temple School, 4.30 a.m., Mr. Temple 12 mins. Messrs. Ambler, Vaile, Lance, Penny, Ritchie each 10 mins. Later Mr. G. L. Temple 15 mins, flying high.

Brooklands.—At Vickers School.—Mr. Barnwell on biplane, Mr. Knight with Mr. Beevor. Mr. Beevor alone. Messrs. Mitchell, Barnwell and Knight on No. 2 mono.

At Bristol School, Mr. Bendall with Cpt. Shott, Messrs. Howard, Skene, and Powell. Lt. Noott gliding. All pupils out till wind stopped flying. 7.0 p.m. Mr. Merriam with Cpt. Shott and Mr. Skene. Mr. Bendall with Lt. Noott.

Salisbury Plain (Bristol School).—Lt.-Col. Hamilton, Lt. Burns, Messrs. Delaplane and Adams alone. Mr. Pizey with Mr. Delaplane and on 80-h.p. mono. Mr. Pixton on new tractor biplane, and with Lt. Orton.

Nottingham.—Fine exhibition by Mr. B. C. Hucks.

Brighton-Shoreham.—At Avro School.—Mr. Shaw, Avro (35 h.p. Green) straights 30 mins. Lt. Porte, R.N., arrived from Hendon on 100 h.p. "Dep." with passenger.

Windermere (Lakes Flying Co.).—Mr. Trotter on Mr. Mr. Gnosspelius's hydro-monoplane.

THURSDAY, June 5th.

R.F.C., Montrose.—Cpt. Longcroft and Lt. Lawrence on B.E.s. Misty weather.

R.F.C., Farnborough.—Lt. Gould with Srgt. Bateman on M. Farman 357, 45 mins. Lt. Gould with A.M. Wilson 20 mins; Cpt. Board on M. Farman 306, 10 mins. On M. Farman 305, Lt. Atkinson 5 mins; Cpt. Board with A.M. Burter 5 mins, with officer of Grenadier Guards 5 mins. Lt. Holt 40 mins on M. Farman 305.

Hendon.—At Grahame-White School, Lt. Evill and Sir A. H. Sinclair straights. Lts. Eales, Moore, Boddam-Whetham and Mr. Russell straights with instructors.

At W. H. Ewen School, 4.20 a.m., on 35-h.p. Caudron No. 1, Messrs. Baumann and F. W. Goodden with Messrs. C. George, Pendlebury, Cowling and Lt. Bewes on 35-h.p. Caudron No. 2. Cpt. Jenings first instruction. M. Baumann on 60-h.p. Caudron, with passenger, to Harrow and back.

At Deperdussin School, on No. 3, Col. Smyth and Lt. Brock straights. On No. 2, Messrs. Jaques and Murray.

At Blériot School, Lt. Low on No. 1. Mr. Gower on taxi.

At Temple School, Messrs. Lance, Vaile, Penny, Ritchie, and Ambler out. Mr. Temple 15 mins alone.

Brooklands.—At Vickers School, Mr. Barnwell with Mr. Beevor and Maj. Brancker on biplane. Mr. Knight with same pupils. Mr. Barnwell with prospective pupil and with Maj. Brancker.

At Bristol School, Mr. Merriam test, later with Mr. Skené and Mr. Powell. Lt. Noott glides from good height. All pupils three turns each.

Salisbury Plain (Bristol School).—Excellent solos by Lt. Col. Hamilton, and Lts. Priestly and Burns and Messrs Adams and Delaplane. Mr. Pizey with Maj. Hewetson and Mr. Garnet in side-by-side mono. Mr. Pixton with Lt. Orton.

Nottingham.—Record gate at Show; 22,000 people to see Mr. Hucks flying. 2,490 paid 6d. each to go into tent, to inspect machine. Great enthusiasm.

Brighton-Shoreham.—Lt. Porte left in morning for Gosport.

At Avro School, Mr. Shaw straights (35-h.p. Green) 30 mins.

Windermere (Lakes Flying Co.).—Mr. Trotter on Mr. Gnosspelius's hydro-monoplane. Mr. Stanley Adams on "Sea Bird." "Water Hen" packed up and sent by road to Hornsea for exhibitions.

FRIDAY, June 6th.

R.F.C., Montrose.—Sgt.-Majs. Fletcher and Measures and Sgt. Mullin on M. Farman. During forenoon Cpts. Longcroft, Herbert and McDonnell and Lts. Martyn, Lawrence, McLean and Dawes on M. Farmans. Lt. Waldron with Lt. Harvey on B.E. to Forfar. Cpt. Longcroft on B.E. with Lt. Fraser Tytler of Iverness.

Stamford.—Mr. Hucks arrived from Nottingham; 38 miles in 27 mins. Excellent journey bar 5 mins rain.

SATURDAY, June 7th.

Hendon: Competition and exhibitions. See report.

Gosport.—Lt. Porte, R.N., on 100-h.p. Deperdussin with Cpt. Halahan in evening started for Hendon, but too misty and came down.

Leicester.—Mr. Whitehouse excellent exhibition on Handley Page mono. Three flights in high wind.

Stamford.—Mr. B. C. Hucks on Blériot, taking up Miss Aldwinkle, aged 12, daughter of local councillor.

Eastchurch.—Mr. Gordon Bell has been flying daily since Tuesday on Martinsyde with numerous Naval officers.

SUNDAY, June 8th.

Hendon: Good exhibition flying. See report.

Brooklands.—Exhibition by Mr. Hamel. Fine flight by Mr. Hawker on Sopwith biplanes (aileron and warp). Took up Comdr. Samson, R.N., on former for long flight.

Brighton Shoreham.—Lt. Porte, R.N., arrived from Gosport with Cpt. Halahan.

Leicester.—Mr. Whitehouse exhibitions on Handley Page mono in big wind.

Gosport.—Lt. Porte on 100-h.p. Deperdussin made another attempt to start at 5 a.m. with Cpt. Halahan, but rain brought them down again. In evening flew to Brighton.

Good Work at the Bristol School.

The Bristol School at Brooklands continues to keep up its high reputation for turning out pilots. Since Mr. Warren Merriam, with Mr. Bendall as assistant, took charge of the school not less than 55 pupils have taken their certificates on Bristol machines, despite the fact that during the period which includes the whole of the last autumn and winter the weather has been more than usually bad even for this country.

Mr. Cody's Move.

Mr. S. F. Cody, pilot, designer, and constructor, who has worked so hard for the furtherance of aviation and has been so singularly successful, and who is universally recognised as a leader of British aviation, has now taken steps to form a company for the promotion and development of his inventions, chiefly with the aim of giving to this country the benefit of his experience and future ideas.

It was evident that, sooner or later, Mr. Cody would have to apply to capitalists for their support in an undertaking which he could not carry out single-handed, but which is likely to become an important factor in the country's defence, as it is only by the assistance of ample capital that he would be able to obtain Government contracts for his machines.

Those interested in the new Cody Company can obtain further particulars from the offices of Cody (and Sons' Aerial Navigation, 3, Princes Street, London, E.C.

Errata.

The Grahame-White Aviation Co., Ltd., write pointing out that Mr. Toné H. Bayetto, certificate No. 488, May 22nd, 1913, took his certificate at the Grahame-White School, and not at another school as stated in the Royal Aero Club official notes. It is naturally not the place of this paper to edit official documents from the Royal Aero Club; consequently, the alteration was not made last week. While on the subject one may also point out that the Sopwith "bat-boat" is fitted with a 100-h.p. Green engine, and not with a 100-h.p. Gnome engine, as the Royal Aero Club official notes stated last week.

The Sopwith Bat-boat.

Some excellent flying has been done recently by the Sopwith Bat-boat at Cowes. The tail and elevator have been increased in size and the front of the boat has been weighted, so that she now answers her controls excellently. Piloted by Mr. Harry Hawker, holder of the British duration and height records, she has made a number of trial trips over the course chosen for the Mortimer-Singer Prize. She got off water and land excellently and landed equally well. On one occasion she made three trips in succession, which was halfway towards winning the prize, when she buckled a wheel, and as no spare was ready she was unable to fly for a few days, and so had to postpone the attempt on the prize. The raising gear for the wheels, which keeps them out of the way on the water, works satisfactorily, and the 100-h.p. Green gives adequate power. There is no reason to hurry over going through the competition tests, as apparently no one else has yet built an all-British waterplane for the job, so the actual winning of the prize can be put off till Mr. Sopwith is satisfied that all circumstances are favourable.

More of "L'Affaire Brindejonc."

One gathers that Mr. Brock and M. Verrier have taken steps to secure the first and second prizes in the race for the Giesler Cup, won by M. Brindejonc while suspended by the Royal Aero Club. Has it occurred to anyone that all the competitors in this race were, ipso facto, disqualified by competing against a suspended competitor and that, therefore, the whole race is null and void? Also, as they were automatically suspended, every pilot who has since competed against any of them has suspended himself automatically, so that by now everyone at Hendon is under suspension and all the races since the Giesler Cup are null and void, and all the prizes must be returned to the donors. The Royal Aero Club looks like having its hands full.

Flying Without Controls.

Mr. W. H. Ewen told the writer recently of a very interesting test M. Réné Caudron made on one of their biplanes (80-h.p. Gnome). The machine being first of all tested in the ordinary way to show that its balance was correct, and that it would fly horizontally, M. Caudron let go the control lever and grasped the trailing edge of the upper plane with his hands. When he pulled the trailing edge down it increased the lift of the upper plane, with the result that the machine rose slowly but steadily. When he pushed the trailing edge up the lift was decreased, and the machine gradually sank. When he pulled down with one hand and pushed up with the other, the machine responded to this improvised warp, although naturally more slowly than when warped in the ordinary manner. The test was carried out before a committee of French officers, and was done to demonstrate that, in the event of a control wire breaking, the machine, if properly adjusted to begin with, could still be manœuvred, so that the pilot would have quite a good chance of reaching the ground safely. The test is the more interesting in that one does not know of any other machine in which the plane itself is within the pilot's reach.

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The whole of the Aerodrome buildings, hangars, cafés, and refreshment pavilions will be outlined by thousands of coloured lights, producing a strikingly beautiful effect. Powerful searchlights will play on the aeroplanes during flight, and at 10 o'clock there will be a magnificent display of fireworks illustrating in a realistic manner "War in the Air." The whole will provide a most impressive and quite unique spectacle, for nowhere else in London can full-sized aeroplanes be seen flying at night-time. All the principal aviators at Hendon will take part.

The new Cafés and refreshment pavilions in each enclosure will be specially decorated with lanterns and flowers, affording visitors the opportunity of taking supper under absolutely novel surroundings.

On Saturday evening, June 14th, in addition to the Illuminated Aeroplane Flights and Firework Display, there will be a demonstration by the illuminated "Willows" Airship, which will manœuvre in conjunction with the aeroplanes.

The displays on each evening will commence at 8.30 p.m. (weather permitting). Admission 6d., 1s., and 2s. 6d., motors 2s. 6d. (including Chauffeur). A special service of 'buses and trams will be run to Hendon on each of these occasions, and there will also be late return services connecting with all parts of London.

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It is hoped by this special effort to bring home more closely to the people of London the importance of aviation; to demonstrate how wonderfully advanced is this newest of the sciences, and to endeavour to indicate its potentialities as a means of transport, and as a sport.

Other Special Meetings will be arranged during the season for South, East, and West London.

COMING EVENTS.

Thursday, June 19th.—VISIT OF BRITISH AND IRISH MILLERS.

Saturday, June 21st.—MIDSUMMER MEETING.

Wednesday, June 25th.—AERIAL BATTLE OF FLOWERS.

Thursday, June 26th.—NIGHT FLYING DISPLAY at 8.30 p.m.

Saturday, June 28th.—ENTENTE CORDIALE DAY.

We shall be pleased to send a complete list of the splendid series of Meetings arranged for the present season. Drop a post-card to the London Aerodrome Offices, 166, Piccadilly, W.

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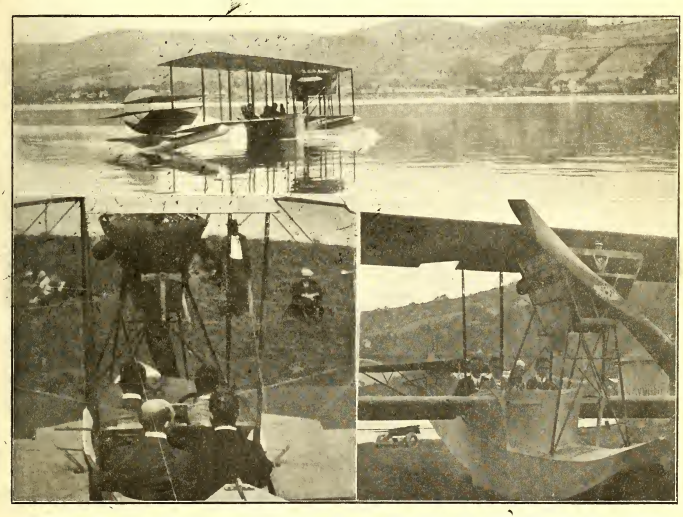
THE AEROPLANE

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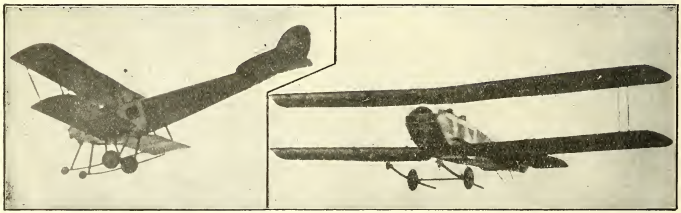
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The Debate on the Royal Flying Corps.—(*Continued.*)

[In the following pages is given verbatim the rest of the debate on military aviation, except that a few sentences of no consequence have been deleted from one or two of the speeches. Colonel Seely's reply is given without any such deletion, and is exactly as it appears in the official report. As an example of mis-statement combined with fatuous ineptitude it stands unrivalled even among that gentleman's contributions to the subject of military aviation. There is, however, one thing to be grateful for, he has spared us most of his usual sentimentalising over the victims of official maladministration. To those with a real knowledge of the subject his speech would be intensely amusing were it not for the actual and potential tragedies consequent on the system he endeavours to defend.—C. G. G.]

Sir Henry Dalziel: In the first place, I would say that I do not think the right hon. gentleman can be surprised if there is some little criticism of the general arrangements in connection with what has been done for aviation during the last few years. He, of course, is not entirely responsible for what has taken place in the past. We must only hold him responsible since he became Secretary of State for War. But when we remember the colossal blunder, the foolish mistake, and the great and extravagant waste of money that we witnessed in the purchase of the Clement-Bayard airship—£28,000, I believe—a purchase which has been admitted since to be absolutely of no service whatever, and now I understand the machine has been scrapped—

Mr. A. Lee: That was only because the War Office would not try the ship. The ship was serviceable.

Sir H. Dalziel: The hon. gentleman says that the War Office would not try the ship. Do we understand that £28,000 was sanctioned to be spent without the ship being tried?

Mr. A. Lee: I am sorry to interrupt, but the right hon. gentleman has been misinformed. In the first place, the entire amount paid by the War Office was only £12,500.

Sir H. Dalziel: I was speaking of the thing altogether.

Mr. A. Lee: And the ship not only had been tried, but had taken an active part in the French manœuvres; had then sailed over from France to this country, and had been taken over by the War Office. The War Office never took the trouble to try the airship.

Sir H. Dalziel: We know that the Government did not actually pay that amount of money, but if it had not been for the action of the Government the total amount would not have been spent on the purchase, and therefore would not have been lost. That purchase was made presumably after full investigation by the War Office, with all their experts, with full time and opportunity to look into the matter, and they now admit that there was a colossal blunder made on their part so far as the ship is concerned, and it has been scrapped.

I had no communication whatever before his speech with the hon gentleman who introduced this Debate, but it is only fair to him to say—and I say it with the fullest sense of responsibility, because I happen to be in a position to obtain some information with regard to one or two matters—that it is useless to deny that there does exist very grave doubt as to whether a recent accident ought not to have been avoided. I say that on my own responsibility. I would ask the right hon. gentleman to see in the first place that all machines that are ordered to fly are properly tested, that there is no shadow of doubt as to their capacity, that the man who is flying the machine has complete confidence in his machine. I say with some knowledge that that is not the case to-day. The right hon. gentleman will not answer me by saying, "Nay, nay." I am not going to give any names as authority for what I say. When I say what I do, I say it on my own responsibility, and as a humble judge of the value of information, and he may take it from me that it is correct that the feeling I have indicated exists in the Flying Corps. I think there is, therefore, great reason for action in regard to this matter. I think the right hon. gentleman should not have an ordinary testing committee, but that he should have a special testing committee with regard to this matter; a testing committee which would give the fullest confidence to members of the Flying Corps. I would ask the right hon. gentleman, "Has he any explanation to make as to the larger proportion of fatal accidents in this country to any other country in the world?"

Colonel Seely: Yes.

Sir H. Dalziel: I think the feeling general, from what I have been able to ascertain, is this: that in the great majority of fatal accidents that have taken place during the last year or two it has been the fault of the machine and not of the driver.

How many machines did the War Office purchase from Mr. Grahame-White, what was the age of them, and what was the amount paid for them? Further, I would like to ask what have these machines been doing since they were purchased? Have they been flown by any experienced officer? What are they accounted equal to at the present time? As I understand, Mr. Grahame-White used them for teaching purposes. Have they been used for that purpose since their purchase? Where are they now? Is it intended to ask any responsible officer to fly them?

Colonel Yate: The point I would like to raise is not so much a question of the actual flying machine that we have been talking about, but the manner in which the Army Flying Corps has been provided for in the Estimates under Vote 1, which we are now discussing. The House will remember, though it is some time ago since the Debate, that the right hon. gentleman, the Member for Leith Burghs, told us that the Foreign Secretary appeared to be obsessed by the idea lest the Estimates of £28,500,000 should ever be exceeded for the Army, and he went on to advance the case that if new and extra services were required we ought to have new and extra Estimates for them. In that view I most cordially join. He said, "If we want more money for aviation we must not be told to take it out of the Artillery." That is exactly the very thing that the Secretary of State has done to provide for the Aviation Corps. Other arms of the Service have been cut down to provide for aviation. I remember reading the "Morning Post," which described the success of the Secretary of State in breaking up six batteries of Artillery as "a stroke of genius." That was the expression used, and that seems to me, looking over the Estimates, the way in which the Aviation Department has been provided for.

Mr. Robert Harcourt: I understand that the hon. member dealt with an answer which the Secretary for War gave to a question which I put on Monday last, and I wish to refer to the answer because it summarises a point which interests me and my constituents, and we are not experts in this matter. My right hon. friend said:—

"The wood of the rear of the wing tip, which was covered by the fabric where the damage probably started, had been

repaired at some time, but it has not yet been possible to discover when and where this repair was carried out."

Then the answer goes on :—

"The machine was carefully examined before the flight on 27th May, and reported all correct."

To the uninstructed person this sentence seems to me to require a little explanation. The machine was repaired and carefully examined, and the examination revealed the fact that the wood of the rear of the wing tip had been repaired. The examination of the machine before the flight on the 27th May could not have been very complete, because it was found that the wing tip was covered by the fabric, and the final examination prior to the fatality occurring was rendered ineffective by the action of the persons responsible for repairing the woodwork and covering it with felt. I am sure that is a point which the right hon. gentleman will carefully consider, and I ask him whether any inquiry has been made into the practice of repairing the woodwork in this way.

Mr. ARTHUR LEE : Before coming to the more general subject I wish to say a few words on the question of aerial defence, which has been extensively referred to on both sides of the House. I should like, first of all, to say that I listened with a good deal of pleasure to the speech of the right hon. gentleman the Member for Kirkcaldy (Sir H. Dalziel), because it was obviously a fair speech coming from a supporter of the Government, and I did not in the least resent the personal references he made to myself in connection with the matter of airships. I do not want to refer to that matter now, because my interruption explained the position of my point of view. I think the right hon. gentleman's speech was helpful, because it must have made the Secretary for War realise that the criticisms which have been showered upon him in connection with his aerial defence policy are not mere party criticisms from this side of the House, and that there is real and legitimate ground for objection and for very serious criticism. When the Secretary for War introduced the Estimates and unfolded his plans in March, he expressed the belief or the hope that the country would be more satisfied with the provision that the Government were making for aerial defence. I think that probably by now he is disillusioned with regard to that particular hope. Further, I would say that the programme which he then outlined has been recognised on all hands as being quite inadequate to our needs. I do not desire to press that argument at the moment, but I wish to demonstrate to the Committee, that even the exiguous programme which the right hon. gentleman put forward has not and is not being made a reality by himself and the War Office. Admittedly his programme applies only to the Expeditionary Force, and that is a circumstance which I think requires an explanation. The right hon. gentleman has set up a standard that the Expeditionary Force requires eight squadrons of aeroplanes quite apart from airships, if it goes to war. That was the standard which the Secretary for War himself set up. He told us on a previous occasion that our Army was the best equipped of any army in the world, with all the necessities of modern warfare, and yet of the eight aeroplane squadrons which he admits are necessary at the present time he professes to have provided only three. We know now that even those three are by no means complete, and the right hon. gentleman only professes to provide five altogether by the end of the present financial year. He does not even claim that he will provide the whole of the eight squadrons until some future Estimate, probably at the end of the year after next.

That is a very serious situation for our Expeditionary Force to find itself in, because it is a force which is supposed to be ready for war at a moment's notice. It is admitted that we require eight squadrons of aeroplanes fitted for the purposes of modern warfare, and yet the right hon. gentleman is making no provision at the present time to provide those necessary squadrons. If war had broken out within the last few months, as indeed it might have done, our Expeditionary Force would have been without the standard of aerial equipment which the right hon. gentleman has declared to be necessary. I think it is due to the House and to the country that the Secretary for War should give some proper explanation for the delay which has occurred, and in the absence of any explanation of his inability to supply these squadrons, I think we have a right to demand that the whole eight should be supplied at once. That relates only to the Expeditionary Force. Even if those eight squadrons were provided, we have no suggestion whatever as to the aerial equipment for our Home Defence Army. That has not even been foreshadowed in the dim and distant future. The result is, if unhappily we were at war, and our Home Defence Army was called into operation, which heaven forbid, it would be provided with absolutely no kind of aerial equipment whatever, and the Territorial Force, in addition to all its other obvious disadvantages, would have to be wandering about blindfolded and practically groping for the enemy, whilst every movement and position of the defending force would be exposed to the vigilance and all-seeing eyes of the enemy's aerial service. I think the right hon. gentleman should also explain to us why nothing is being done in that direction. I do not want to go unduly into details, because the question has been very exhaustively dealt with by my hon. friend the Member for Brentford (Mr. Joynson-Hicks), but I do hope that to-day we may have this mystery as to the number of defective aeroplanes cleared up.

The Secretary for War appeared always to resent any inquisitiveness on our part with regard to this question, and he still more resents any doubt we may feel and have expressed with regard to the figures. May I point out that the right hon. gentleman himself is largely responsible, because he has given such amazingly different figures on different occasions that we really do not know what to believe. On 24th March, the last occasion on which we had a Debate on this subject, the right hon. gentleman told us no less than three times that he expected by 31st May we should have available 148 machines. Here we are on 5th June, and even on the right hon. gentleman's own showing we have only got ninety-five—that is 126 minus thirty-one, which are not available. Of course, my hon. friend the Member for Brentford (Mr. Joynson-Hicks) has expressed very grave doubts, and he has given his reasons and figures for believing that the number of ninety-five is not accurate. I frankly admit that I am not in a position to state how many aeroplanes there are. In the absence of official figures, it requires an amount of investigation which a private Member of this House is really not in a position very often to carry out. I have made no challenge nor have I made any statement as to the right hon. gentleman's accuracy, though I have very grave reason to doubt the real numbers that he gave us. In the meantime, I say that he himself has been very largely to blame for these misunderstandings. Whenever he has had anything to tell us that he thought would redound to the credit of his Department, he has been openness itself in giving us details, but whenever a question has come up where we have been, perhaps quite unjustly, suspicious, then down has come the veil of official secrecy, and we have been told that it was a matter in which it was not in the public interest to give the information. He must excuse me for saying, from some experience now of watching Governments drawn from both sides, that whenever a Minister begins to talk about giving information not being in the interests of the public service I am always a little bit inclined to think the information would be inconvenient politically as well as undesirable in the interests of the country. We will, however, judge of his information when it is produced.

The right hon. gentleman is apparently perfectly satisfied with his three little airships. I am not going to contest the opinion of his advisers that the three small airships are sufficient equipment in airships for the Expeditionary Force. I understand that from him, and I am prepared to accept it, but where are his reserves of airships? He must know that of all craft that proceed either on the water, under it, or over it, airships are surely the most delicate and the most fragile, and in war there must be an enormous wastage and a great number of casualties, but as far as we know, the right hon. gentleman is making no provision whatever for an adequate supply of vessels of this kind. His plea for not having more aeroplanes is that it is impossible to get them delivered from the makers. Of course, it is impossible, as was pointed out by my hon. friend, to get delivery from private manufacturers if you do not give private manufacturers any kind of reasonable encouragement to invest their capital in this enterprise. The discouragement of our British manufacturers by the Govern-

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ment has been persistent. We have had another more striking example of that to-day in the recent prohibition, as I understand it, by the Government of a very interesting, and I think very valuable competition which was instituted by a newspaper, the "Daily Mail," in order to develop the hydroplane or waterplane, or whatever it is to be called. It would, in the absence of Government encouragement obviously have been of very great encouragement to the manufacturers of these machines, but now we are informed that the Government, acting through the Home Office, has placed an absolute ban on this competition, with the result, of course, that it cannot take place.

In the meantime, the manufacturers of these machines are thrown back. There is no incentive given to them and no opportunity offered them to produce new and better types of a machine which is obviously peculiarly suitable to the needs of this country. I do think that the Government ought to give some explanation of their reasons for placing their veto upon this very interesting and useful proposal. I realise that it might involve a technical breach of the Aerial Navigation Act, which was passed last Session. Personally, I do not believe that Act is of the very slightest value if you are dealing with an enemy, because, obviously, they would ignore it. It may have some effect if you are dealing with tourists, and it may have been necessary, but surely this is a case where there should be some relaxation of the letter of the law. I cannot understand why the Government should have put its veto down in this matter. Do they wish to discourage civilian flying altogether in this country? Do they wish to have an absolute monopoly? If so, it will be the only country in the world where the Government has a monopoly, and we shall fall far further behind than we are now in the development of this new branch of science. The Home Secretary probably acted in consultation with the War Office, and perhaps the right hon. gentleman may be able to tell us why it has been necessary to place a ban upon this competition. It certainly seems to me, when we are far behind, as we are, in these matters, that no effort to recover our lost ground, whether made by civilians or anyone else, ought to be either frowned upon or impeded. I therefore hope that the right hon. gentleman will tell us what is at the back of the whole thing.

Colonel Seely, after speaking on other matters, continued: That brings me to the question of aviation, in which these erroneous statements always reach a culmination. Then it becomes the duty of the responsible Minister, in this case myself, to make a statement and the whole thing crumbles to the ground. Then laboriously is built up a further palace of fiction to be again, I suppose, made to crumble to the ground. In this matter I appeal to the Committee, as I did once before, to approach the subject of aeronautics in a similar way to that in which they approach other branches of Army policy. That is not done, and I think it is because it is such a new science that so many people, knowing really nothing about it, have to write something, and, to be quite frank, write the most utter nonsense. [At any rate, some of those who write on the subject of aviation have had some years' more experience than those who control the Royal Flying Corps.—C. G. G.] I do not propose to deal with the more absurd statements to-day, because, of course, they are not generally made in this House, but I will first deal with the very important matter of the accidents which have taken place, before I come to the absurd nonsense to which I referred. There are one or two absurdities which have been suggested with regard to this matter, too. There have been statements made that we have suffered greater loss of life in aeronautics than other countries owing to the fact that we have been less careful in our selection of machines or less careful in testing them. Let us see how this matter stands. First of all, with regard to tests. Before we accept any aeroplanes—and this applies to them all—all aeroplanes have to fulfil the following tests: First, a loading test by which the strength of the construction is tested, that is to say, the machine is loaded with a weight of sand. During this any one wire may be cut and the aeroplane must suffer no permanent distortion. Further, there is a test for the landing carriage, which goes over a certain fixed rough course, at the place where all our aeroplanes are tested. The Committee will realise that the landing carriage of the aeroplane may often be more important to the life of the aviator even then the wings themselves. Then there is the flying test, of not less than an hour's duration, during which the aeroplane must carry a full load and oil and petrol sufficient for the prescribed number of hours. In addition the maximum and minimum speeds must be demonstrated, and the workmanship and the material must be to the satisfaction of the superintendent of the Royal Aircraft Factory. All these things have to be done in the case of each aeroplane. Furthermore, before any aeroplane takes a flight it is inspected by the commanding officer of the place where the aeroplane may be, and every effort is made to see that everything is correct. Every test that we know of is applied, and not until he certifies that it is fit to fly does the officer take a flight.

Sir H. Dalziel: Every time?

Colonel Seeley: Every time the machine goes up. [This is an absolute untruth. The only test is the running of the engine for a few seconds to see whether it is misfiring. I have seen an Army aeroplane make flight after flight without anyone even looking at a nut or a wire.—C. G. G.] The next question is what has been the result of the great care which I allege we take in avoiding accidents. I will tell the House how the facts really stand. Of course, it is very difficult to get information with regard to foreign countries. I have been told to-day by the hon. member for Brentford (Mr. Joynson-Hicks) and the hon. member for Fareham (Mr. Lee) that I have not told the House enough about our men and materiel; but I can assure hon. members that this House has been told a great deal more as to the number of aeroplanes and the number of men than any other deliberative Assembly elsewhere. I have reason to know that in other countries, where they are more subject to attack than we are, it is generally considered undesirable to make any statements with regard to aeroplanes and flying. Here in our country we can afford to be less cautious, but I would say to the Committee that we have gone as far as it is wise to go in giving information, and in going so far we have gone very much further than any other country in the way of publicity. That is why I cannot say exactly how matters stand with respect to foreign accidents. In the United Kingdom during the past year there have been five fatal accidents, resulting in eight deaths. I am confident that every member of the Committee joins with me in saying that those gallant young officers who have died in flying have as truly died in the service of their country as those who have died in the most glorious acts on the battlefield. [If we had had less sentiment and more aeroplanes there would be fewer fatal accidents.—C. G. G.]

First of all, as to the machines on which these accidents took place. Let me say that it is a most remarkable thing that what has happened tends to show not that it is impossible, for nothing is impossible, but that it is extremely difficult to avoid these accidents. Experience has shown that even the utmost care may not succeed in averting accidents. The suggestion has been made that these accidents take place with old machines, but, will it be believed—it is a remarkable circumstance—that they take place on machines which, by any known tests, were regarded as the very best machines and the most carefully tested we have got. The Committee will remember that we had a competition open to all the world some nine months ago, which some hon. members attended. It was a most exacting contest, in which aeroplanes from many foreign countries took part, and in which many remarkable performances were achieved. There were first, second, and third prizes awarded, and one machine which did not compete was considered by the judges to have been superior to them all. Out of the five fatal accidents, involving the loss of eight lives, no fewer than four were caused by those machines. These were actually the machines which had won against all the world, and had shown themselves most airworthy, most stable, and best constructed. [An Hon. Member: "Were they wanting in stability?"] We have no evidence of that. On the contrary, it appeared to be the case that what was the best design for that day had got some defect which nobody could know until the accident occurred.

Two more accidents occurred recently where actually the machine was a prize machine of the type which was considered



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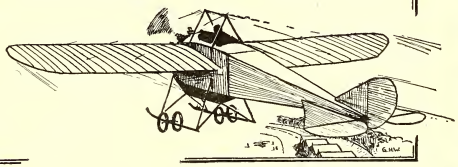
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best. Coming to the particular accident at Montrose, about which I have been asked questions to-day by several hon. members, I have to say that here was the case of a machine which was considered by all our officers to be of an exceptionally good design. Our flying officers, or most of them, so far as our information goes, do prefer this machine to almost any other, and many of them prefer it to any other. The actual machine was flown all the way from Farnborough to Montrose, and it did not meet with any bad weather, as I happen to know. Naturally, it was most carefully examined before it started on its journey, and it was most carefully examined again on its arrival. One would naturally have said that a machine that could fly from Farnborough to Montrose in bad weather was probably the safest machine to fly upon; and, in fact, if anyone had asked what was the safest machine at Montrose on the day this accident took place a very large number of those skilled in these matters would have been inclined to say it was this particular one. We cannot be certain as to the cause of the accident, but what we think caused it was a defect in the woodwork of the tip of one wing. Hon. members know that the woodwork is covered by a panel, and you cannot see the inside of the panel. We keep a most careful record of any accidents that occur to an aeroplane. Every one has a life history which is recorded. It is not very difficult to keep such a record; as hon. gentlemen know, the number of aeroplanes is not so large. There was no record of any accident to this machine. Of course, one cannot tell what happened to cause the accident, but we will try to find out what took place. One can guess as to what took place from what has occurred so often before where there has been an accident to one's motor-car. I remember a case where the radiator was nearly knocked off, and the driver was knocked off the car. That resulted in nothing but inconvenience; but this accident, alas! resulted in death. It might fairly be claimed that nothing we could do could avoid accidents of this kind. I am not sure that that is the case, for, as I have said, nothing is impossible.

It has occurred to me that we might make flying safer if we were to have spare wings, and if at frequent intervals we completely stripped the wings—not only the outer, but the inner, panel—and examined all the inside. It may be said that you will get danger by taking off and putting on the wings, and that you will weaken the structure. I am told that is not so, and that the balance of advantage will be in the examination of the panels. This will mean a considerable number of spare parts of all kinds as well as wings, and spare parts are being provided. [An obvious precaution which should have been taken from the very beginning. That it is not the custom is another sign of maladministration.—C. G. G.]

We regret the accidents to people in other countries almost as much as to people in our own. In France, which, of course, is far ahead of the rest of the world in all matters aeronautical, they had thirteen fatal accidents and seventeen deaths, or a little more than double the number we had. It is well to know the proportion of men. The figure I have got here as to the number in our aeronautical service is 756. I know that number to be accurate. The number in France is 1,174. If you were to take the properly qualified pilots there would be very little to choose as between the two countries. Let us go further in the comparison, because France is much larger than this country, and has, in that respect, a great advantage. In Germany, alas, they have been much more unfortunate. I do not know the precise number in Germany of their personnel or their pilots but it is not very different from our own. I think they are rather more numerous, but very little. There, instead of having five accidents, they had twenty-one; and instead of eight deaths, I am grieved to say they had twenty-seven—three and a half times as many as we had. Perhaps it is most remarkable that America, although she was a pioneer with France in this matter, has not taken up aviation for military purposes at all keenly. She only allotted £45,000 for aviation last year, and she has only a negligible quantity of aeroplanes. She has probably less than an eighth part of our aeroplanes. I regret to say that she had the same number of accidents which resulted in fatalities.

You have to remember the further fact that flying in England is peculiarly difficult and dangerous as compared with flying in Continental countries which have wide stretches of land, for this reason—here in our island kingdom we are subject to much stronger and more gusty winds, so that it is very difficult to carry on flying operations. We live in a very enclosed and very hilly country. The enclosed and hilly nature of the country has two results. It makes cross-country flying more difficult. The first difficulty arises from the hilly nature of the country, and the number of trees makes air disturbances more frequent than in foreign countries. A still greater drawback is that it makes it much more difficult to find a landing-place, and, so far as I know, in two-thirds of the accidents which have occurred the landing difficulty was a contributory, if not the principal, cause. In open country like the plains of France a man who is flying is in almost as good a position as on Salisbury Plain. At any moment he can come down. In this country, before coming down, he must look for a suitable place, and, having found what he thinks a suitable place, he may come down in a particular field and find that there is a wire fence at the end of it. He has then to ascend again and look for another place. I have dealt at some length with the question of accidents, and I think I have shown that they have not occurred as the result of want of care taken by our flying officers. The whole thing is new. A year or so ago there was nothing in the way of military aviation. We have the most difficult country to fly in in Europe, but, judged by any available test, we have been far freer from fatal accidents than any country except France, and possibly as free as France herself. [But we only do a tenth of the mileage.—C. G. G.]

That reflects great credit on those who have been engaged in the business. It has been suggested that we might have made a comparison of the miles flown, but we cannot do that because we do not know the miles flown abroad. Even if we did that would be most misleading because flying round an aerodrome is very safe compared with flying across country, as the pilots in the aerodrome not only know the landing places, but it is a curious thing that they get to know the condition of the air of the aerodrome and the direction and force of the currents which will come from a particular piece of water or group of trees. But even if that test were taken, I think that it would be found that we have enjoyed a remarkable immunity from accidents. But I assure the House that no expense will be spared to ensure that everything will be done to make this, the most dangerous, as it must be, of all branches of our Service, as safe as mind and money can make it. With regard to the misapprehensions, and what I venture to call the absurdities, that have been expressed as to the question of numbers, I hope that I shall not be asked to state the precise number of aeroplanes which we have, because no other country gives the information; but I did think it desirable, and I spoke with the full concurrence of my colleagues, to make a general statement in view of the fact that the House knew nothing of what had been done. They knew that we had started practically with nothing at all in the May of last year, and they thought it right to give the information. No sooner was that given than there came a chorus of demands, which could not have arisen if I had stated so many guns, so many men, so many wagons. Our experience is that our officials speak the truth, and therefore it is hardly worth while to call a concrete fact like that in question. But I found it very difficult to convince people until at last I found a man, an acknowledged authority on the subject, who definitely said that it was not the case. I thought that we had disposed of that for good and all when Lord Montagu wrote me this letter, which I must now read again, because I am bound to read it again to-day so as to dispel these foolish suspicions in order that we may get to real business:—

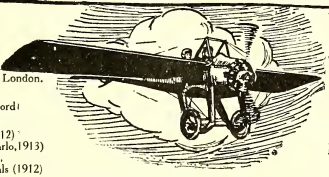
"I was very glad to receive your invitation to come to the War Office to-day, and to inspect there the documents supplied by your official advisers, and to meet the General Officer who is charged with the administration of the Roal Flying Corps.

"I am now fully convinced that the number of aeroplanes you have publicly stated represents those really available. I am glad to know that the number is, at the present date, in excess of the 101 you stated on 19th March were then in the possession of the War Office.

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"I quite appreciate the necessity for secrecy in these matters, and understand how misapprehensions may have arisen, and regret that I gave publicity to erroneous figures."

I really should have thought that that would have disposed of it. I hope that it will convince the hon. gentleman to-day. I have now made him another offer. Of course, if he likes to come and see the same documents that Lord Montagu saw, I shall only be too pleased, and it may save him the trouble of wandering round. What he now says is that if I can produce for him eighty efficient aeroplanes—he does not give the test of efficient aeroplanes, but I suppose it is rising 3,000 ft. in the air and travelling 50 miles an hour—he will present a full and ample apology. I cannot bring them to him. I will send him to them. I cannot undertake to send him to all the new types which we are considering. I do not propose to show him anything confidential, but I ask him to see with his own eyes the actual things. If he doubts whether I have the number of guns which I have stated in the Estimates, then I will make the same arrangement.

Mr. JOYNSON-HICKS: With regard to the guns, they are in batteries. Everybody knows them. He is willing to see them. There are so many guns in a battery. When I ask him how many aeroplanes there are and in which aeroplane battery, he will not tell.

Colonel SEELY: It is because we do not make it. We know that all our guns are of a certain fixed type. Our aeroplanes are constantly changing in type. We do not want everybody to know what types we have. In no other country do they give so much information as we do, and we shall not ever get on with the proper discussion of this subject and secure the proper co-operation of all parties, in so far as the matter is not a subject of party conflict, as we have in other subjects, until this absurd suspicion is dissipated. Directly I showed the papers to Lord Montagu he made the most ample apology, which I have read to the House. In the same way the hon. gentleman asks that I may produce for him eighty good machines as to which, without giving away any secrets of the State, I have no doubt he will be able to tell us what he thinks of them. Incidentally, no doubt, he will have a good many other matters to consider, and I hope that he will take a good many flights himself and see what admirable machines they are. On the question of the type of the machine, the hon. gentleman surprised me very much. He referred to the Farman machines as though they were an obsolete and unworkable craft. That may be so, but it is not the opinion of any aeronautical authority that I know of. In fact, I should say that these particular machines for military purposes would often be of extraordinary value.

Mr. JOYNSON-HICKS: What I think I said was that those particular machines did not go beyond sixty miles an hour, whereas the modern French monoplane goes up to seventy-five.

Colonel SEELY: We have machines that go to greater speeds even than that. But you do not want all your aeroplanes to go at these great speeds—far from it. The principal purpose for an aeroplane is observation, and for that purpose these machines are of peculiar value for military purposes. What really is the position? I quite accept the hon. gentleman's statement that he has no personal feeling in this matter, and I ask him to accept my statement of the facts which I have given. Assuming the facts, we have made a very remarkable advance. A little more than a year ago we were in the same position as all other countries except France. We had practically no aeroplanes, no pilots, no flying school, no skilled mechanics, and no organisation, and every other country except France was in the same condition. Of course, they had some few pilots, some few machines, and the beginning of an organisation. We decided, when I took my present office, that we must make a move, and in that short time I will ask the Committee to say that we have made a great advance. We have got now 120 machines. I take those only in first-class order. We had practically no pilots. We had one or two extremely efficient fliers. I am glad to say that some of them are still flying, but they were only very few. Now we have 146, and of those 146 there are 83 of what we call first-class pilots. All those 83 first-class pilots passed a more exacting test than the French military test or the higher test of the Royal Aero Club. It is a very long course. It lasts thirteen weeks. They are constantly flying. They have to learn all these things: The principles of mechanics, the construction of engines, the construction of aeroplanes, meteorological observations in the air, navigation by compass, cross-country flights, photography, signalling by all methods, and other things, such as the study of the types of warships. All this they go through for thirteen weeks. Eighty-three have done that, and all this in less than a year. It does speak volumes for the energy and determination of people in this country, once they get the opportunity to go forward, that 83 men, judged by available tests, are, except the best French pilots, the most highly qualified pilots in the world; and what is indeed remarkable, all these men have been trained during this thirteen weeks' course without a single accident.

I think that this reflects great credit upon the able officers at the Central Flying School. We practically had no aeroplanes, and no pilots, and no flying school at all. I went down to the place myself and selected it a little while ago. There was nothing there but a ploughed field. Now we have a first-class establishment, which has produced 83 first-class pilots, and is passing through pilots at the rate of about sixty or seventy in the year for military purposes, and, of course, a proportion of naval officers too. Then we had no skilled mechanics. We could not get them. They were not in the country. And so small was the aeronautic industry here that we could not get any. There were very few makers who were making aeroplanes, and they wanted all their mechanics for themselves. Now we have a very large staff of trained mechanics, trained not only as mechanics in ordinary mechanical work, but trained in that very highly specialised work, the mechanical work of aeroplane engines, and aeroplanes themselves. Then we had no organisations, and there was the case of the Clément-Bayard airship. That was before my time. It is quite true that we made some mistake, and there was an expenditure of £12,500; but I ask my hon. friends to reflect on what has been spent and wasted on these airships in France and Germany, and I think they will agree that we have avoided undue extravagance and undue waste with regard to that.

Sir HENRY DALZIEL: What I complained of was that the thing was bought without any test whatever.

Colonel SEELY: That was long before my time. I do not know from personal knowledge exactly all that was done, but I understand the envelope was deflated. We were strongly advised by hon. gentlemen opposite, who, in fact, subscribed a large sum of money, to make patriotic efforts to purchase the ship, which cost several thousand pounds, but like wise people we cut our loss, and if we never make worse mistakes than that we will be more fortunate than our neighbours. I can assure the right hon. gentleman that nothing of that sort has occurred since. Although we are rightly told we have only three military airships, yet they are very efficient airships, in fact, remarkably so, and if the hon. gentleman opposite really wishes to know what sort of airship we have I would beg him to go down to Aldershot and arrangements can be made for him to go up in one of those vessels. It is perfectly safe. When I tell him that these airships have been all over the country flying thousands of miles, and that there has not been one single accident, and when you compare that record with the record of other and less wisely countries, which have had a series of disasters, I think it will be agreed that in the airship branch of the Military Wing of the Royal Flying Corps we have not done badly. I do not think I need detain the Committee further with regard to this matter.

Mr. LEE: Has the right hon. gentleman anything to say about stopping the competition?

Colonel SEELY: I am asked why we are stopping the "Daily Mail" competition. I am very glad to be asked that question. Like all other things said about aeronautics, there is not a word of truth in the suggestion. [There is a subtle difference between stopping the race and making it practically impossible.—C. G. G.] I think there is a complete misapprehension of the true facts of the case. We have, as the Committee knows, thought it desirable to define certain areas of the country over which people shall not fly. We do not allow

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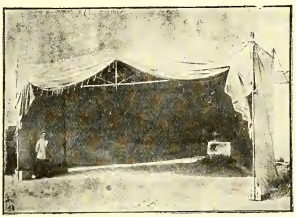
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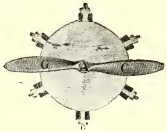
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people to approach, either by land or by water, certain fixed points in the country. It is all very well to say that it is not in the public interest to refuse this competition over certain areas, but it is in the public interest, I submit, to define what are the points which we do not wish people to fly over. That is all we require. The "Daily Mail" proposed this competition, and, speaking for myself, I need hardly say I am delighted that the "Daily Mail" shows so large a public spirit in the matter of flying, for which we are all grateful. But while we appreciate to the full the very great services that journal has rendered in aeronautics, when they came to make arrangements for the competition with aeroplanes, we found that it was proposed to fly over not only one but two of the most important points which we are determined, if we can, to prevent anyone from flying over. Of course, we suggested to them other proposals to facilitate their arrangements, and as to the rest of their plans we made it perfectly plain that we had not the remotest intention to interfere with them, and I dare say we will be able to come to some arrangement by which the contest can take place.

Mr. Amery: Is the right hon. gentleman only referring to the land race, or is he referring to the hydroplane race?

Colonel Seely: I am referring to the hydroplane race, which is the one that has been alluded to, and that is the one on which the difficulty occurs. I hope we shall come to a satisfactory arrangement about it.

I will now deal with the general question of aeroplanes. I have now, I hope, satisfied the Committee that we have made a very ample advance, and in so doing we have not sacrificed lives in as great a proportion as other countries, and we will make every endeavour to secure that our flying shall be conducted with safety. Now comes the question of the future. We had no organisation a year ago; now we have a sound foundation on which to build. The real difficulty has been that we could not get the things we wantanted, nor could we get the workmen. I have stated in public, and I repeat it here, that it has not been lack of money that has caused the delay, nor was it lack of money which caused the small delay, showing a discrepancy of twenty aeroplanes over what we have now; it is simply that we cannot get delivery. If you attempt to accelerate and hurry up the contractors, there is always the danger of scamped work, which might lead to accidents and loss of life. This is one of the industries in which you cannot press people to go too fast. We found also that there was practically no industry of this kind in England on any large scale; but the policy of the British Government in the matter of aeroplanes, engines, and all things connected therewith, is now to get all that they require from within the British Isles, so far as it possibly can. Since the aeroplane has become an engine of war, it must be treated in the same way as other war material. I am glad to say with regard to aeroplanes that we are rapidly approaching—in fact, we have reached the position where we can get what we want. Whatever we think is desirable in the way of aeroplanes we can order, and though they may be produced more slowly than we could wish, yet we have the mechanics, the skill, the capital, and the plant with which to make progress.

With regard to the engines, we are approaching a similar position, but it has not come yet. I have here a list of nine English engines that are now in process of examination, completion, and testing. In regard to the competition for a considerable prize which is proposed, the whole of the details are at this moment in print and will appear in the course of two or three days. As the result of that competition, I have no doubt that engines will be obtainable in this country within a very short time.

There are nine engines of different forms, I happen to know from confidential inquiries, and no doubt most of them will take part in this competition. I believe that we are now in a position to go forward as far as it is wise and proper to go. We do not, of course, pretend to have a great aeronautical establishment like that of France, but compared with any other country our position is not an unfavourable one. I cannot make a precise comparison, but, from such information as I have been able to obtain, I should say that whereas a year ago we were nowhere, we are now certainly amongst the first three, and possibly in the first two, in the provision of really skilled pilots and proper machines for them to fly, with all preparations for training a force. That is my information. That the number is adequate, I do not for a moment allege. It could not be so in the short time. I am asked if the seven squadrons are ready, or when they will be ready. I cannot give the date. If we tried to do the work more quickly it would lead to a waste of money, and probably a loss of life. I fully admit that the time has now come when the aeroplane industry has become more standardised. The House may say, "You have a small Army, therefore you ought to have a large aeronautical establishment. This is supported by expert advice. If that view is correct, you ought not to regard a small aeronautical service because you have a small Army, but you should rather make up for your small Army by having considerable power in the air."

I think we are in a position now to go forward. The matter is receiving careful consideration at this moment. We are still working; we are still making great advances; and, if it be so decided, it is possible to advance further and so secure this country that she may hold her own in the air.

Mr. Hazar Greenwood: I wish to congratulate the Secretary of State for War especially on the pluck he has shown in testing these fickle air machines of various kinds.

Generally speaking, I submit that the War Office is the meanest department now, as it has ever been, in the State, and my criticism is this: The Secretary for War, and the Government of which he is a member, has no business to curtail the salaries, and especially the pensions or allowances of those not able to earn them themselves, without submitting some scheme to the House of Commons.

Coming to a special case, I would like to say that the ghastly record of the air and the still more ghastly comparison that the Secretary of State rightly made with other countries brings home to us who are members of this House, who run no risk whatsoever, absolutely none with reference to the Army, and especially the air department of the Army, the fact that every time one of these men loses his life in these fickle machines, which are growing more essential every day, the least the House of Commons can do is to see that the man's widow and children are so well and adequately provided for, that every time he goes up to serve his country and to risk his life he can go up with the confidence that every man would like to feel, that this House of Commons and the country will not forget to provide for those dependent upon him. I submit the present allowance, the present pension given to the dependants of these brave men of all ranks of the Army, are lamentably small—smaller, in every case, as I understand it, than the salary we have voted ourselves, not for risking our lives, but for attending this House.

An Explanation.

There seems to be a good deal of confusion about the various people connected with aviation whose address is 166, Piccadilly. Therefore the following explanation may be of use.

166, Piccadilly, is a block of offices. The whole of the third floor is occupied by the Royal Aero Club. On the fourth floor are situated Messrs. Lang and Garnett, propeller makers; Messrs. B. C. Hucks and J. C. Savage, aviation exhibition promoters; The Aeroplane newspaper; the Green Engine Co., Ltd.; and Messrs. Delacombe and Maréchal, who are vendors of aeroplanes, hangars, and various other goods connected with aviation. On the fifth floor are the Grahame-White Aviation Co., Ltd., who are the proprietors of the London Aerodrome, Hendon; and on the same floor is the West End office of Messrs. Bray, Gibb and Co., insurance brokers.

No one of these offices or firms has any connection with any of the others, though many people seem to think that because they are all in the same building they are all interested in one another's business. Possibly this statement may save the occupants of the various offices from the continual telephone calls inquiring about business concerning the other offices.

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The Belgian Aviation Service.

BY W. E. de B. WHITTAKER.

The time for preliminary experimentation in military aeronautics has apparently passed, and many of the Powers of Europe are organising the nucleus flying corps they have hitherto possessed. France, Germany, Italy and Great Britain have all formed corps on the practical footing of the fifth arm. Now Belgium has created a proper aeronautical service. This nation, whose political activities so far as foreign relations are concerned are overshadowed by those of its two great neighbours, has no need of a large army. The will of the Great Powers of Europe preserve its independence. The peace establishment of its army is only 47,000 with a maximum of 2,000,000 on a war footing. This army and the line of fortifications on the Meuse exist only as a precaution against the bad memory of foreign politicians.

Small though the army may be, its system of organisation and the state of efficiency attained are both of high excellence. It is, therefore, of interest to study the lines adopted with reference to the new arm. As has been shown throughout the ages, organisation and efficiency count for much more than mere size.

The Belgian military flying corps is, under the decree of the King, to consist of an indeterminate number of "escadrilles" and an aviation school.

The aviation school is to be at Brasschaet. The staff is to be as follows :—1 captain (in command), 2 captains (2nd class), or lieutenants, acting as technical instructors (these three officers being drawn from the Engineers), 1 captain (2nd class) or lieutenant (not an Engineer) as tactical instructor, 1 officer in charge of administration, an adjutant in charge of matériel, 2 sergeant-majors, 1 quartermaster, 3 civil mechanics attached for service, and an unstated number of rank and file.

The school is charged with other duties than the mere training of pupils. All reserve engines and matériel are kept there, and all trials of engines are made at the school under the supervision of the commandant. In time of war it becomes the depot for all the escadrilles.

The buildings are now in course of construction and by the end of the year there will be accommodation for fifty officers, barracks for 110 men, twelve metal hangars, a row of workshops, an engine-room for electric lighting and heating, and a laboratory for experimentation in wireless telegraphy.

The manifold uses for which the school is intended are very proper. If the school confined its duties to the training of pilots it would mean an unnecessary duplication of both staffs and buildings. A school outfit should be the finest possible, and therefore its uses are very great in time of war.

Possibly in Great Britain the Central Flying School will increase its sphere of usefulness in the course of a year or two.

The escadrilles are to consist of four aeroplanes apiece. Each aeroplane has attached to it two officers, both capable of acting either as pilot or observer. One of these eight officers commands the escadrille. The personnel of each escadrille is as follows :—1 under officer, 1 corporal and 15 rank and file (of which 6 are mechanic drivers, 2 under-mechanics, 4 carpenters, 1 cutter, 1 smith, and 2 assistants), and 6 attached civilians (4 mechanic drivers and 2 carpenters).

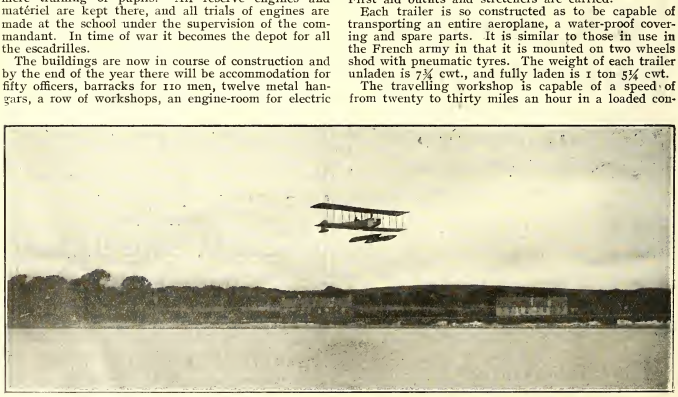
The aeroplanes in use are all of the Henry Farman type built in Belgium and fitted with Gnome engines (80 h.p.), also built in the country. The weight of each machine without pilot or fuel is 7¾ cwt., and each is capable of lifting efficiently a useful load of 5¾ cwt. Each is capable of flying horizontally at a speed of 62 m.p.h., and of rising to a height of 1,600 ft. in eight minutes. The radius of action is 180 miles or a flight of three hours' duration.

Transport is supplied to each escadrille to the extent of 4 motor-tractors, 4 trailers, a travelling workshop and a supply motor wagon.

Each of the motor tractors is of 24-30 h.p. and is capable of a speed of fifty miles an hour if alone, or of thirty miles with a trailer attached. On these tractors the personnel is carried, and injured or wounded men. First aid outfits and stretchers are carried.

Each trailer is so constructed as to be capable of transporting an entire aeroplane, a water-proof covering and spare parts. It is similar to those in use in the French army in that it is mounted on two wheels shod with pneumatic tyres. The weight of each trailer unladen is 7¾ cwt., and fully laden is 1 ton 5¼ cwt.

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dition. It carries normally all the supplies needed by the mechanics, wood workers, cutter, smith and so on, all tools that may be required, a dynamo driven by a separate motor supplying light to the aeroplane tents, spare propellers and an extra supply of spare parts. A spare Gnome engine and some oil and petrol is carried.

The general matériel of the escadrille is disposed as follows :—

On the aeroplane, a map case, an aneroid barometer, a clock, a compass, a revolution recorder, field glasses, two complete sets of rainproof covers for vital parts of the aeroplane, a tool kit and some spare parts, such as valves and sparkling plugs.

On the motor tractors, an aeroplane tent, tool kits for the mechanics, wood workers and drivers, propellers, spare parts for motor wagons and for the aeroplanes, spare instruments, maps and clothes and also a supply of oil and petrol.

All such things as are required for the assembling of the aeroplanes before making a flight are carried on the travelling workshop.

The aviation school as has been explained, is at the same time the corps headquarters. An escadrille will be stationed consequently permanently at Brasschaet. Two escadrilles are to be at Liège and one at Namur.

The general line of distribution of the escadrilles of the Belgian Flying Corps will be along the valley of the Meuse in obedience to the general principles of defence adopted of recent years by the Ministry of War. In the royal decree no reference is made to dirigibles, of which, I understand, there are three in Belgium. That country is influenced far more by the action and opinions of France than by the methods of its Teutonic neighbour. The power balloon has not been in great favour in France of recent years, hence Belgium has done little in that way. Another reason for the lack of action is the high expense involved even in a small degree of experimentation. Again, Belgium will not take part in any war without the support of France, and in that case the Belgian Flying Corps merely supplements that of its neighbour.

The small escadrille of four aeroplanes intended under the new scheme has much in its favour as against our large and unwieldly squadron of twelve machines. Complications are likely to be less in action, and an entire escadrille can be detached for service instead of a section of the larger body as in the case of our Expeditionary Force.

No apparent provision has been made for reserve aeroplanes in each escadrille. It is probable that there will be a general reserve from which the replacement machines will be drawn as occasion demands.

(The material for this article has been mainly drawn from an excellent summary of the decree published by "L'Officier de Semaine" in the Parisian "L'Aero.")

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty appointments, June 12th. :—

Lieutenant—D. A. Oliver, to the "Hermes," additional, as flying officer for Cromarty Air Stations.

Admiralty appointments, June 16th :—

Lieutenant Patrick B. Crohan to the "Hermes."

From the "London Gazette," War Office, June 13th :—

Special Reserve of Officers, Royal Flying Corps, Military Wing.—Sec. Lieut. (on prob.) D. G. Young resigns his commission ; A. L. Russell to be Sec. Lieut. (on prob.) (June 14th).

Lieutenant Glanville, piloting a Maurice Farman biplane with Lieutenant F. G. Small as passenger, had an accident on the morning of June 13th at Hangleton, Portslade, near Brighton. In the fog they missed Shoreham Aerodrome and, after flying on a little, their engine stopped, bringing them down by Hangleton Church, where they struck a wall after landing. Neither officer was injured, but the machine was entirely wrecked.

There has been practically no flying at Montrose this week, as most of the machines are being overhauled. Some trouble has also been experienced with faulty engines. This general overhaul is understood to be the after-effects of the fatal accident to Lieut. Arthur.

A shed has been erected on the sands at St. Andrews, and one or two flights have been made between it and the Montrose Aerodrome. It is to be used for a base for reconnaissance work in Fifeshire, which is expected to continue for two or three weeks, the reason for this move being to cover a larger field of observation flights. There is also news that a similar scheme is to be extended to various other districts.

The weather being comparatively calm on Monday morning last, H.M.A. "Beta" ventured out and evoluted over His Majesty the King while he was driving to the review of the Household Cavalry in Windsor Park. Thereafter, the airboat journeyed to London passing over these offices shortly after two. A puffy breeze having arisen her progress over London was slow, the journey to St. Paul's being made at about the speed of a motor 'bus in a clear street. After heading towards the south on two or three occasions in a manner which led one to believe that she refused to answer a port helm, the helm was put to starboard and she headed to the north. She crossed London at a height of not more than 500 feet, and appeared at times to be at about 200. The idea of appearing before the King so soon after his return from Berlin was ingenious, as it doubtless impressed on His Majesty the notable difference between the ineffectual Beta and the Zeppelin which acted as escort in Germany.

FRANCE.

Lieutenant-aviator de Lussigny, one of the military aviators attached at Mailly Camp, has, during the period of his attachment, made with great regularity a number of flights over a total distance of 800 miles. His machine is a Maurice Farman biplane. Each of his flights is across country. The freedom from even slight accidents is proof of the wisdom of permitting officers to fly across country as they will. Flying training cannot proceed by routine.

The naval manœuvres have now come to an end. One cannot gather definitely the extent to which the hydro-aeroplanes were used, but it is stated that the two Nieuport monoplanes alone came through without damage. These two machines were piloted by Lieutenant de vaisseau de l'Escaille and Ensign Delage. They are now stationed at Toulon.

On June 10th Lieutenant-aviators Rochette and Radisson, each flying a two-seated Deperdussin monoplane with a passenger, left Maubeuge and flew to Reims. Lieutenant Rochette and his passenger then flew to Bar-le-Duc, where they arrived safely, having covered a total distance of 136 miles.

The escadrille of Maurice Farman biplanes at Epinal has again had a good week. The escadrille is stationed on a ground at Dogneville. On June 10th Sapper d'Autroche made a reconnaissance in the direction of Remiremont. Lieut. d'Abrantes spent most of the day practising the art of dropping bombs to the imminent danger of all his friends assembled on the ground. Lieutenants Battini and Bordes amused themselves by flying over the town of Epinal. Quartermaster Quennehen also flew over the town until he saw the dirigible balloon, "Capitaine-Ferber," fly towards the aerodrome. He then made several circles round it to prove to his own satisfaction the vulnerability of all gaseous things.

On the following day Lieutenant Roeckel flew to Ramberviliers and back, and Quartermaster Quennehen and Sapper d'Autroche both spent the afternoon over the town.

On June 12th Captain Guillabert, O.C. the centre at Villacoublay, flew on a Nieuport monoplane to Evreux that he might take part in the opening of the new aeroplane station at Bellanger, the first to be finished of those provided by the Nationa'

Committee. His time between the two points was 45 mins. During the evening he returned to his base by air.

On June 12th Lieutenant de Challonge, flying a Nieuport monoplane (70-h.p. Gnome) named "La Défense de Paris," and purchased for the army by national subscription, passed the final tests for his superior brevet. He flew over a circuit of which Villacoublay, Chalons, Brienne, and Villacoublay were the turning points. The entire journey was made at a height of 3,000 feet.

Lieutenant Radisson, who flew from Maubeuge to Reims on a Deperdussin monoplane on June 10th, continued his journey to Bar-le-Duc on June 12th, where he rejoined his brother-officer Lieutenant de Rochette. His time for the 62 miles was 45 mins.

The officers, N.C.O.'s, and men of the Etampes centre have opened a subscription in order to erect a memorial to Sergeant Richy, killed in the ill-fated balloon the "Zodiac."

Two officers, three N.C.O.'s, and fifteen men of the aeronautical service have been attached for a course of three months to Fort Mont-Valerien at Paris in order to acquire experience of wireless in connection with its application to the needs of aeroplanes.—W.

GERMANY.

Lieutenant-aviator Carganico, with Lieutenant Zimmerman as passenger on a biplane, left Johannisthal at 3.30 a.m. on June 9th with the intention of travelling to Breslau. Their engine gave out 30 miles from that place and they were forced to land.

On June 8th the preliminary trials of the Zeppelin dirigible "Z.19" were begun at Friedrichshafn. The first flight lasted one and a half hours. Nothing has been decided as to the station of this machine, which was to have gone to Oos, near Baden.

The aviation station at Graudenz will be ready for occupation towards the end of the year. Twenty-eight aviators will be attached. The aeronautical troops will be the 2nd Company, 2nd Aviation Battalion, and the 2nd Company, 5th Aeronautical Battalion.—W.

Should the trials end satisfactorily, the German fleet of dirigibles will be enriched very shortly by three new Zeppelins. The airship to replace "Z1." is undergoing its tests at present, being the nineteenth turned out by the Friedrichshafn works. Another vessel is nearing completion and will be listed as No. 5. The last of the trio is intended for the navy, and is to be stationed at Johannisthal. The new Schütte-Lanz, a Parseval (No. 4), and a reconstructed Gross (M. 4), will all belong to the army before the end of the year. The total additions in the course of 1913 would therefore be four Zeppelins, two Parsevals, a Schütte-Lanz, and a Gross—thirteen effectives in all.—B.

AUSTRIA-HUNGARY.

It is stated in the "Zeit" that, as a result of the visit of the Zeppelin dirigible "Sachsen" to Vienna, the Ministry of War has decided to order six Zeppelins of the latest type carrying machine-guns. They are to be delivered during 1915, and will be stationed at Vienna, Prague, Lemberg, Innsbruck, Budapest, and Sarajevo.—W.

According to Austrian papers, negotiations are pending between the Austrian War Office and the German Aerial Transport Company regarding the purchase by the former of the "Sachsen" Zeppelin, which flew from Baden to Vienna and back to Friedrichshafn last week.

The weather conditions permitting, the "Sachsen" Zeppelin, piloted by Count Zeppelin, carried out its journey from Baden-Oos to Vienna on June 9th amid intense enthusiasm. Starting from Baden at 5.30 a.m. in company of L.Z. 19, which was on its way to Frankfort to take the military commission on board, the two vessels parted at Stuttgart, "Sachsen" following out the route leading via Regensburg, Ulm, Passau, Linz, Wiener Wald, to Castle Schoenbrunn, where the Austrian Emperor is staying. After manœuvring around the castle, the dirigible flew to Vienna-Aspern, arriving soon after three o'clock. Count Zeppelin received a huge ovation on landing, this being the first visit paid the Austrian capital by a Zeppelin. It may be noted in connection with this that there is not a single hangar in all Austro-Hungary capable of housing one of these dirigibles, and the Z. had to be anchored in the open. This fact was the reason the War Office sent out a very large number of men and arranged for the patrolling of almost the entire route. The seven hundred odd kilometres that separate Baden-Baden from Vienna were covered in eight hours, giving an average speed of 88 kilometres (roughly 55 miles) per hour, in spite of the stormy winds encountered along the Danube. It was proposed at first to start before midnight for the return journey with Berlin as destination, but the break in the weather rendered this impossible. Ascending at 2.57 a.m. on June 10th, the "Sachsen" steered for Friedrichshafn via Passau and Munich, where a landing was made on the Oberwiesenthal aviation ground as petrol supplies were drawing short. Friedrichshafn was reached at half-past four in the afternoon, where congratulations were showered on all members of the trip. Dr. Eckener piloted the vessel home, as Count Zeppelin was the Emperor's guest on Tuesday at Schoenbrunn.—B.

RUSSIA.

A half squadron, consisting of three Nieuport monoplanes (70-h.p. Gnomes), piloted by Captain-aviator Bertschenko, Lieutenants Makeef and Touchensky, left Sevastopol on June 7th and flew to Kief, a distance of 600 miles. The date of their arrival is not given.—W.

BELGIUM.

The aviation school at Brasschaet was, on June 8th, for the first time since its formation in May, 1911, inspected by the Chief of the General Staff, General Ceuninkz. The inspection lasted from 10 o'clock in the morning until late in the afternoon.

A new military aviation school for preliminary training was opened at Kiewit on June 1st under the command of Lieutenant-aviator Demanet.—W.

MEXICO.

The uses of the aeroplane, not only as a scouting agent, but as a rapid means of communication across the plains of Mexico, has for some time kept the attention of the Ministry of War. One great difficulty that has to be overcome is the



ON TOUR.—A Short biplane, type S.38 (80-h.p. Gnome) after landing in the country from Eastchurch.

great natural height of the country. The plateau is about 6,000 feet above sea-level.

A preliminary order of twenty Blériot monoplanes (80-h.p. Gnomes) has been made. Thirty-one officers under Senor Cervantes, who is already an aviator, have been sent to the Blériot school at Buc.—W.

FOREIGN NOTES.

France.

The great flight of the week was that of M. Brindejonc des Moulinais from Paris to Warsaw in the course of one day.

He had announced his intention some days ago of attempting to capture the Coupe Pommery. His intentions were, if possible, to fly from Paris to Petersburg in one day. On the morning of June 10th he left Villacoublay at 3.57 a.m. on a Morane-Saulnier monoplane (80-h.p. Gnome). At 6.45 a.m. he landed at Wanne, near Essen. Two hours later he left for Berlin. He landed at Johannisthal at 11.4 a.m., having covered a distance of 591 miles in five hours' flying time. He left Johannisthal at 2.40 p.m. in a very high wind and flew to Warsaw where he landed at 5.15 p.m., having covered the entire journey at an average speed of about 130 miles an hour. The actual distance covered by him during the day, measuring from point to point, was 990 miles.

The weather kept him at Warsaw until June 15th, when he left at 5 a.m. for Petersburg. He reached Vilna at 9 a.m. He left again a little later and reached Dvinsk, where he broke a wheel in landing. This has delayed his journey for the day at least.

On June 14th Mr. Corbett Wilson on a Blériot monoplane (80-h.p. Gnome), with his mechanic as passenger, left Boulogne (Hardelot) at 5.10 a.m. and reached Hendon at 6.17 a.m., having covered a distance of 126 miles.

Portugal.

It is reported from Lisbon that on June 13th M. Manio fell from a height of 1,000 feet whilst flying a Blériot monoplane and was instantly killed. One understands that he is the pilot who during the course of last year landed on the roof of a house at Highgate whilst flying in a fog.

Germany.

Twenty-four entries, including those of two women, have been received for the international week at the Vienna-Aspern-field. The aviatresses are Fraulein Steinschneider, 65-h.p. Etrich monoplane, and Mme. Pallier, 80-h.p. Astra biplane. Among the men are Illner (three Etrich monoplanes), Widner, Sablatnig, Rupp, Audemars, Bielovucic, Garros, Lagagneux, Chevillard, and a number of others.

The "Deutsche Telegraph" is responsible for the statement that a company is being formed at Darmstadt to exploit a new type of light-weight motor. The War Office is said to be interested. It is also asserted that the city of Darmstadt has opened negotiations with various firms; should these come to satisfactory results, several works would take up their headquarters at Darmstadt. By the by, Darmstadt is to become a military airship and aviation station, the Weiterstädter drill ground having been determined on as such.

Fraulein Beerbohm, who has just taken her brevet on a Grade monoplane at Bork, is the fifth woman to gain a certificate in Germany. She intends opening an aviation school at Leipzig.—B.

Austria-Hungary.

With the death of Franz Seidl at Vienna on June 10th there passed away a racing cyclist of international reputation at the end of the 'nineties and beginning of the new century. For several years the tandem partners Buechner (now also a well-known aviator), Seidl, and later Huber-Seidl were invincible in professional cycling. When Seidl left the track he entered the motor industry, and eventually turned to flying. He took his brevet last year. At the time the accident occurred Seidl was testing his machine at the Enzersdorf ground, when he side-slipped. Seidl was flung out and was so severely injured that he died soon after his admittance to hospital. He was thirty-four years of age.—B.

Caudrons for the Navy and Army.

On Thursday, June 12th, M. Caudron received at the Crotoy Aerodrome a wire from Mr. Ewen at 6.5 p.m., asking for the immediate delivery of a hydro-biplane for the Admiralty. Notwithstanding the late hour, the 80-h.p. hydro was brought out of the shed, and M. Caudron and M. Marty immediately boarded her, leaving Crotoy at 6.15 p.m. With a slight wind blowing the evening was beautifully clear, and at a height of about 6,000 to 7,000 ft. the aviators were able to get a beautiful view of the English coast. They first of all landed in Sheerness Harbour for petrol and immediately after went across to the Isle of Grain, arriving there about 8.35 p.m., where, with the Caudron combined wheels and floats which were fitted they were able to give some nice exhibitions, both on the land and on the water.

On the same day, Mr. Sydney Pickles was out testing the new British-built Caudron biplane with the 6-cylinder 40-45-h.p. Anzani, at Hendon, and put up an excellent exhibition with banked turns and spirals. Thereafter he immediately started off to deliver the machine at Farnborough, reaching an altitude of 6,500 ft., and accomplishing the journey against a stiff wind in 1 hr. and 8 mins. On arriving at Farnborough, Mr. Pickles did a beautiful banked spiral from this altitude, after which he was up again several times doing some spectacular flying, and putting the machine through its flying tests.

On Friday, the 13th, the W. H. Ewen Aviation Co., Ltd., had delivered from their works at Hewlett and Blondeau's another British-built Caudron, into which was immediately fitted a 45-h.p. Anzani motor, and on its test flight on Saturday it was taken up to several thousand feet by Mr. Sydney Pickles. The way the machine climbed was remarkable and Mr. Pickles demonstrated the machine to such advantage that even the most severe critics did not stint their admiration.

The Reception Trials of the Astra-Torres.

On the morning of June 12th, the new Naval airship, the "Astra-Torres," made the first flight in its reception trials. The weather had not been pleasant for some days, and it was only at ten o'clock in the morning that the French pilots considered it advisable to take the machine into the air. The preliminary preparations are, owing to the bad accommodation very critical and trying. The shed in which it is housed, though the biggest in Farnborough, is not wide enough to permit of an easy extraction or insertion of an airship the size of the "Astra-Torres." In fact, there is barely two feet to spare on either side of the dirigible as it passes through the entrance.

Shortly after ten the wind dropped and it was decided to make a flight. The dirigible was brought out of its shed stern first by the men of the Naval Airship Squadron. With two French pilots in charge and with Commander E. A. D. Masterman, R.N., Lieutenant N. F. Usborne, R.N., Major Maitland, M. Chenu, and several mechanics as passengers, the ship slowly rose. At an altitude of about 200 feet she sailed southward, pitching rather badly. For over twenty minutes the pilots manœuvred her with perfect ease of control over the neighbourhood of Farnborough. When at a height of 2,000 feet over Laffan's Plain the ends were seen to curve slightly upwards and she began to return to the landing place. As she got lower and nearer the curvature became worse, until it seemed that disaster was certain. As it happened a perfect landing was made, M. Juchmès giving an excellent display of judgment and skill, and in a short time she was safely housed in her shed. On examination it was seen that nothing was damaged. The official explanation of the mishap is as follows :—

"The 'Astra' airship made her first ascent, which was successful so far as speed and manœuvring were concerned. Unfortunately pressure could not be maintained, as the belt which drives the fan by means of which the pressure in the balloon is maintained was slipping badly. M. Juchmès, the pilot in charge, thereupon decided to stop the motors and land. The landing was very successfully carried out, with the result that the airship landed on Farnborough Common, where the landing party brought her safely to rest. The airship was then safely rehoused, and will continue her trials after the necessary alterations to the mechanism for maintaining pressure."

At eight o'clock in the evening the "Astra-Torres" was again brought out to undergo mooring tests. She was towed

to a mooring post on the common and her nose was attached to the cone-shaped cup at the top of the post known as the nose-cap. In this position she is free to swing in any direction, so that the least surface is always presented to the wind. After undergoing a mooring trial of 24 hours she was released and taken back to the shed. The trials if the weather is favourable, will be concluded this week.—W.

The Retort Courteous.

The following friendly and amusing letter has been received from Mr. Alfred Docker, Chairman of Wm. Coward and Co., Ltd. It speaks for itself:—"As one of the founders of the Imperial Air Fleet Committee I have read the very interesting article on the handing over of the "Britannia" monoplane by my committee to the Government of New Zealand which appears in your issue of June 12th. I have nothing to complain of in the humorous way in which the function has been treated, as the article is quite in good taste and in places worthy of the late Mark Twain. Unfortunately, however, the writer, I believe, quite unintentionally, has fallen into a few errors which I trust in common fairness to my Committee you will allow me to correct. In our choice of our aeroplane, the engine, and fuel, we were not influenced by a desire to show England what the foreigner could do, but solely because having set out to have the best of everything so as to ensure a successful flight, we were forced, and I say it with some sadness, to select a foreign machine and engine, because we felt, rightly or wrongly, that at the present moment, through no fault of their own, British manufacturers could not supply us with the wherewithal to secure a reasonable prospect of success.

"Mr. Hamel is not a Scandinavian, but an English-born British subject. Mr. Dupree is a Scotchman. Mr. Chéreau was not the flight manager, but a member of the Flight Committee. The mechanic-in-charge was a pure bred Englishman and perhaps all the Committee themselves, though they modestly cannot lay claim to be, as you suggest, 'the smartest business men in London,' are, at any rate, all Englishmen to the backbone, and have done what they did, not for any personal or trade advertisement, but from the purest patriotic motives. Even Mr. Rosenthal, the capable manager of the 'Standard,' though his name suggests a Teutonic origin, is a fellow-countryman of Bobbie Burns. The only thing Spanish was a spanner with which the nuts of the machine were tightened. The only thing Italian the hum of the Gnome, the only thing Hungarian the half-famished condition of the intrepid aviators upon their arrival at Cologne. Mr. William Coward, the Chairman of our Committee, is described as Sir James Coward, an indignity he is not anxious to anticipate."

"Trusting you may find space for this letter in your next issue to prevent any ill-natured individual from suggesting the title of 'Errorplain' for your well-named and well-informed publication."

Concerning the Royal Aircraft Factory.

Those persons who are still inclined to uphold the pre-eminence of the "B.E." biplane built by the Royal Aircraft Factory may be interested to know that information has just come to hand of a third "B.E." machine which broke in the air, fortunately without serious results to the crew. There are happily few other makes of machine of which such a small number are actually in use where the percentage of breakages in the air is so high.

As a proof that there are those of wide experience who agree with the attitude taken up by this paper, it may be of interest to note that the officers of the Naval Air Service have been ordered not to fly the two Government-built "B.E." biplanes in the possession of the Navy, though numerous officers of the Royal Flying Corps (Military Wing) have to fly "B.E.s" or nothing. An official ban was placed on all monoplanes when the record of monoplane accidents was far less formidable than that of the "B.E.'s," and one is surprised that a similar ban has not been placed on "B.E.'s"

The attitude of the authorities in this matter bears an exceedingly ugly aspect, for it either implies that implicit faith is being placed in the pseudo-scientific knowledge of those who are unworthy of trust, or that the authorities would rather risk the lives of the pilots of the Royal Flying Corps than admit the fallibility of official favourites.

Incidentally those who are interested in the doings of the Royal Aircraft Factory may be interested to hear that the engines of the four Flanders monoplanes have been taken out and used for other purposes. The information is that they have been used in "B.E.'s." It is further stated that the four Flanders machines have now practically been scrapped, as have all the Deperdussins at the Royal Aircraft Factory. It would certainly be possible to put these machines in flying order again, but it could not be done without having them absolutely rebuilt by men who understand that particular make.

With reference to many machines of other makes, which at present are in urgent need of a thorough overhaul, it is unfair to officers of the Royal Flying Corps that machines which have been bought from various makers should not be sent to those makers to be thoroughly overhauled instead of being tinkered with either by the Flying Corps mechanics or by people in the Royal Aircraft Factory who have not been trained in the construction of these particular machines.

A somewhat contradictory series of statements is forthcoming when inquiries are made as to who is responsible for the use of machines of certain types. The officials of the Royal Aircraft Factory deny that their department has anything to do with the buying of machines, and state that they have to buy what the pilots of the Royal Flying Corps wish, and the Royal Flying Corps say that they have to fly whatever the Factory chooses to give them. The whole state of affairs is altogether unsatisfactory and demands a committee of inquiry as urgently as did the question of the housing of the poor, or the dealings of Ministers in Marconis.

Mr. Hucks and the New Act.

Mr. B. C. Hucks succeeded in obtaining permission to fly over the prohibited area at Louth, Lincs., chiefly because all his arrangements had already been made and the Home Office recognised the fact that serious inconvenience would be caused if permission was refused. However, permission was only granted on the condition that he did not fly within a mile of the sacred wireless station, and that he undertook not to take up any foreigners as passengers. If the Home Office took an equally reasonable view of other applications and accelerated their machinery a trifle so that a definite answer could be obtained within a reasonable time there would be little to grumble at in the Act.

Adventurous Ballooning.

The balloon race which started on June 11th from the Crystal Palace was not unmarked by incidents of interest. Mr. Arthur Spencer, for instance, accompanied by his wife, landed on a railway line near Tilbury and held up a goods train. They did not, however, contravene the Laws of the Medes and McKennas; that horrible calamity was left for Mr. Henry Spencer and "Captain Penfold." These two, passing over the neighbourhood of Gravesend, heard some loud reports, which they realised with a freezing sensation near the heart, must be the dreaded official warning. They were over a Prohibited Area. Mr. H. Spencer, with an exclamation of horror, went far further than Bunty; not only did he pull the string, but he made it fast to ensure the quickest possible descent. Our heroes dropped incontinently into a clear field where several law-abiding citizens, moved by patriotic frenzy, seized the trail-rope. After sundry bumps the valiant two found themselves suspended in their basket from a tree, a very disconsolate and tattered-looking envelope trailing over the other side of it. Two aeroplanes now arrived and prevented any chance of escape by air while civil and military authority were represented by two policemen and a soldier. The situation was hopeless. Like the redoubtable Colonel Bowie's legendary opossum, "Captain Penfold" felt inclined to cry out, "Don't shoot, Colonel, we'll come down." Authority was lenient; it was the first time that any air traveller had come down in response to the legal signal.

The Brooklands Accident.

On Friday last, the 13th instant, Lieutenant J. R. B. Kennedy, R.N., was killed at Brooklands while flying as passenger with Mr. Gordon Bell on the Martin-Handasyde monoplane, 120-h.p. Austro-Daimler engine, and Mr. Bell was severely injured.

Lieutenant Kennedy was one of the first batch of Osborne cadets to pass into the Navy. His career in the Service, though short, was exceptionally brilliant, and he could scarcely have failed to have attained to very high position had his life been spared. He was appointed lieutenant with seniority of January 15th, 1912, and joined the Central Flying School for the first course this year. While there he took his certificate on a Short biplane.

After leaving the Central Flying School he did some very fine flying at Eastchurch and across country, including a trip to Hendon and back, on the Sopwith biplane, and bade fair to be one of the best pilots in the Navy.

J. R. B. Kennedy, known among his friends as Hamish, was of Scottish origin, though hailing from Saltburn, in Yorkshire—the place where, by a curious coincidence, Mr. Edward Petre was killed. He was born on April 13th, 1891, in Fifeshire. He was an only child, and to his parents all will extend the deepest sympathy. The Navy can ill spare one who was at once so promising an officer and so fine a flier.

As to the cause of the accident there is no possible doubt. One can only assume that, exhilarated by the sensation of flying, Mr. Bell was not responsible for his actions, and instead of flying with his usual level-headedness and caution, did things which no pilot in full command of his faculties would have attempted. Every aeroplane pilot, and every driver of a car which is able to travel at all fast, knows these fits of exhilaration, when the engine runs perfectly and one feels that it cannot stop, when the air seems to act like a stimulant on one's nerves, when one feels absolutely in tune with the machine which answers to one's touch like a sentient being. On these occasions the aviator plays tricks that he would never attempt in his saner moments, and the car driver takes corners and rushes cross-roads in a way that he would be the first to condemn when thinking it over quietly. One practically becomes hypnotised or intoxicated—perhaps some physicist will explain how—by the rush of the air and the roar of the engine, and for the time being one is absolutely beyond one's own control.

During these fits the aviator or the car driver frequently finds out things about his machine which are useful to himself and others, in that they extend the general store of knowledge of what an aeroplane or a car can do. For instance, the unintentional side-slip of either vehicle, successfully corrected while in this hyper-sensitive state, teaches how an intentional side-slip done at the right moment may save a bad accident. But once in a while the driver of either machine may go a shade too far, with fatal results.

Gordon Bell is one of my oldest friends in aviation, and I have been with him under all sorts of conditions so that I can vouch for his steadiness of character better than for that of most men. He lives an exceptionally quiet life, does not keep late hours, is not a teetotaller, but dislikes alcohol and drinks very little, smokes moderately, is always physically fit, and consequently has excellent nerves. Also, he is unusually long-headed for so young a man, and thinks things out seriously. He has often spoken to me of his disapproval of "stunt" flying, especially with a passenger. He has good hands, and excellent judgment of pace and distance, as has been proved by his many long flights, frequently with unpremeditated landings, and always without accident. Also, he has probably flown more different makes of aeroplane than any pilot in the world. In fact, he possesses all the qualities which go to make a safe but clever flier. Therefore, the circumstances surrounding the accident are the more out of the ordinary.

On the day of the accident Bell was evidently wound up to one of these fits of exhilaration, for I learn that at Eastchurch that morning he had been flying on the Borel and on the Martin-Handasyde in a way which startled even the Naval pilots, doing astounding banked turns with his wing-tip only a few feet off the ground. In the afternoon he and Kennedy started for Brooklands. Over Hendon they were at about 1,000 feet, but after two turns of a small spiral they came down to about 300 feet, and at that height went straight up Colindale Avenue and across country. At Weybridge, instead of crossing at 1,000 feet or more so as to be able to glide to a landing place, they literally went through the town instead of over it, dodging between trees and jumping over houses with only a few feet to spare. Then they went to the golf links, where they did more banked turns close to the ground, so low that they could not be seen from the sheds at Brooklands over the railway bank. Then they jumped the bank, flew at the main block of sheds, jumped them, and thereafter for about a quarter of an hour gave an exhibition of flying which scared even the most experienced pilots who are used to Hamel and Chevillard. Eye-witnesses, who are keen observers and are used to a steep bank followed by a dive, tell me that Bell was doing complete circles with the upper wing practically vertical —they estimate 3 degrees or 5 degrees from the perpendicular —and of such small radius that the machine was actually side-slipping upwards owing to her speed and centrifugal force. After fifteen minutes of this, during which both occupants of the machine were waving cheerily to the people below—for the performance had brought everybody out of their sheds—Bell made a full circle right over the sheds very low down, and then went on for a further half circle, still with the same appalling bank. This time the machine began to side-slip inwards. The left wing-tip missed the top of sheds Nos. 27 and 28, which face towards the sewage farm and Weybridge, by inches. The whole machine dropped sideways, the left wing hit the ground and the machine turned the usual "cart-wheel," landing on the nose at an angle of about 45 degrees, and at the same time throwing out to the right by its own centrifugal force. I did not turn over, as reported in some papers. Kennedy was thrown forward and sideways, and broke his neck. Bell hit something or other in front of him which fractured the front of his skull, and at the same time he cut his nose badly, probably with his goggles. The broken woodwork in the body of the machine made it difficult to get them out, but the delay so caused made no material difference, as Kennedy was killed on the spot, and Bell was found upright in his seat still semi-conscious and demanding to be left alone till Kennedy was got out.

The first thing one of those present saw to was the matter of the petrol, so as to avoid any danger of fire from leakage, and to his surprise he found there was scarcely any petrol left in the tank, so it is possible that on the last prolonged bank the petrol may have fallen away from the supply pipe and have stopped the engine or eased it off just when in such a position that there was no way of escaping the sheds except by the desperate expedient of continuing the bank and dropping over the nearest edge of the roofs. Another very experienced pilot, who was flying towards the sheds from the Weybridge end at the moment, tells me that before it struck the machine came off the banked angle very considerably, as if Bell was trying to flatten out and land in the rough before reaching the sewage farm, and no one seems to be able to swear that the engine was actually running full when it cleared the sheds. Possibly the position of the petrol store, which the machine can only have missed by a foot or so, prevented Bell from attempting out to volplane. Or, of course, it may have been simply a side-slip in spite of the engine running at full power.

The only satisfaction to be got out of the whole unfortunate affair is the test it has given of the possibilities of the machine, both in the air and in the subsequent smash. The cruel luck that has pursued Mr. Martin and Mr. Handasyde for the past two years has surely culminated in this accident. No one has spoken and written more frankly about their machine than I have. There were certain things I disliked in the construction of former machines, and I said so, but this last production differs very materially from them, and after examining the wreck very carefully indeed, I particularly wish to bear witness to the fact that the material, the workmanship, and the design have stood up to the shock in a way which at once re-

moves any suspicion of weakness. The tip of the left spar broke when it hit the ground, but the rest of the wing was practically unhurt, and the right wing was also apparently undamaged in any way till the rescuers trampled on them, and even then the damage was small.

The fuselage broke between the pilot's and passenger's seat, where it obviously would break, but the fractures are not short or brittle looking. The shock was so great that the engine tore itself out of its own lugs, which were left still bolted to the unbroken engine bearers. Very much in the body was broken, but the way things have fractured and stayed in their places shows that the strength of the various parts has been cleverly balanced. Personally I have much more confidence in the machine since I examined that wreck than I had before, and believe that others have been similarly affected. One may look at an engineering job in process of construction and admire it very much, but it is only when one has seen how it stands up to a smash and the manner in which it breaks that one really learns enough to give one complete confidence that its weakest points are where they should be.

This is, perhaps, the wrong place in which to say these things, but, from remarks I have already heard made by those who are only too anxious to speak ill of others, I feel that they should be said at once, and that they may possibly come better from me because I have condemned these and other machines when it seemed necessary to do so in the interests of aviation. One can only hope that after this blow the partners' luck may change, and that they may reap some reward for their pluck and perseverance before long.—C. G. G.

The New Curtiss Four-Seater.

At Hammondsport, N.Y., on May 20 and 21, Mr. Harold F. McCormick's big flying boat, built by Glenn H. Curtiss, passed successful trials on Lake Keuka, near here. Mr. Curtiss was alone in the machine when the first trip was made, and he carefully tried out all of the controls and felt the balance of the machine before taking anyone with him. Though this is the largest and heaviest flying boat ever made, it proved unexpectedly fast, and lifted out of the water easily. Running on the water it proved itself the fastest machine in the big fleet of flying boats and hydro-aeroplanes out that day. It skimmed the water at fifty and odd miles per hour, and in the air did more than a mile a minute.

After the initial run, Mr. Curtiss took first one passenger for a trial and then four passengers, himself included. Under all conditions the big flying boat showed to advantage. As a motor boat it ran as slowly as three or four miles an hour. Up to fifty miles an hour it would run on water, but above that speed her inclination was to take to the air, where she flew very steadily and almost as fast as the smaller machines.

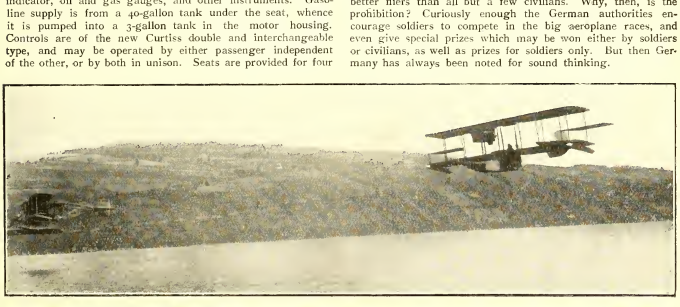
Like the Curtiss military tractor, the McCormick craft has the 40-ft. Model F, one-piece wings. The motor is the new Curtiss Model O.X. 90-100 h.p., and it is enclosed by a housing of aluminium alloy. Nearly four feet of freeboard are provided by the deep sides of the cockpit. Forward, the bow is very shallow, tapering off almost to a point; in rough water it is expected the waves will wash over the bow which, with the cockpit, is shaped to clear itself quickly. The motor is practically self-starting, and also has a safety starting crank, for emergency use, within easy reach of the operator. Carburettor adjustments can be made without stopping the boat or leaving the cockpit. On the dash, as in an automobile, are located the aneroid, a 2,000-r.p.m. speed indicator, oil and gas gauges, and other instruments. Gasoline supply is from a 40-gallon tank under the seat, whence it is pumped into a 3-gallon tank in the motor housing. Controls are of the new Curtiss double and interchangeable type, and may be operated by either passenger independent of the other, or by both in unison. Seats are provided for four people, but controls are provided only for those on the front seat.

Some idea of progress in the U.S.A. may be gathered from the fact that there were half a dozen water-flying machines on Lake Keuka during the trials. R. V. Morris, of New Haven, had out his fast little 26-ft. hydro-aeroplane with 80-h.p. motor; Marshall Reid had his new flying boat; Beckwith Havens was in another flying boat; Lansing Callan had a standard Curtiss hydro-aeroplane; and W. Van Vleet had another standard machine. Three or four more flying boats, including those of Mr. Vilas, J. D. R. Verplanck, G. M. Heckscher, will shortly be added to the fleet, and within a couple of weeks there should be more water-flying machines, privately owned, than participated in the recent international races at Monaco. And these will be true flying boats, and not mere racing aeroplanes with the lightest possible pontoons.

Officers of the R.F.C. in Public Competitions.

In the recent R.Ae.C. balloon race started from Hurlingham much interest was caused by a double-decked balloon, named "R.F.C.," piloted by Major M. Maitland, O.C. No. 1 Airship and Kite Squadron R.F.C., and containing a number of officers of the Royal Flying Corps. This balloon was manufactured by Gaudron, Ltd., whose manager, Mr. A. E. Gaudron, is one of the most experienced aeronauts in this country. One gathers that the new departure was a great success.

Incidentally one wonders why officers of the R.F.C. are permitted to compete in balloon races and not in aeroplane races. It cannot well be for fear of the taint of professionalism, though professional aeronauts are barred from certain balloon races, for many officers of the Reserve of the R.F.C. are professional aviators. And it would be unfair to infer that the authorities fear that our officer-aviators would show up poorly against professionals, for many of them are better fliers than all but a few civilians. Why, then, is the prohibition? Curiously enough the German authorities encourage soldiers to compete in the big aeroplane races, and even give special prizes which may be won either by soldiers or civilians, as well as prizes for soldiers only. But then Germany has always been noted for sound thinking.



The four-seater Curtiss flying-boat built for Mr. Harold McCormick, chasing an ordinary type Curtiss over Lake Keuka.

Flying at Hendon.

Both the afternoon and evening shows on Thursday were very good. In the evening conditions were perfect, but during the afternoon a very bumpy little wind added interest to the many flights.

Messrs. Noel and Verrier made several flights, with passengers and otherwise, in their respective Maurice Farmans. Messrs. Cheeseman and Manton flew well in the newer Grahame-White box kite. Sig. Nardini was out in his speedy Deperdussin (50-h.p. Gnome) performing at low levels in a somewhat startling fashion. Mr. Hall also was in fine form, circling and leaping about the aerodrome in accordance with the very best Blériot traditions. Mr. Temple had his Caudron out and flew in excellent style. Mr. Beaumann also showed what could be done with a 35-h.p. Caudron, flying on one occasion for nearly forty minutes and landing in a beautiful steep spiral; another delightful descent was that of Mr. Brock on a 35-h.p. Deperdussin who came down from a great height very steeply with an occasional rifle-like shot from his engine. Mr. Barron of the "Dep." school also made a very pretty flight on the same machine.

Towards eight o'clock, spectators began to roll up in increasing numbers until by the time the aeroplane lights began to be really luminous, a great concourse of people had assembled. The chief performers in the illuminated events were Mr. Noel on the G.-W. Maurice Farman, Mr. Cheeseman and Mr. Manton on another of the G.-W. biplanes, and Sig. Nardini, whose great speed added considerably to the effect of the fascinating spectacle. With Mr. Manton Capt. Tyrer also went up with the object of destroying by bomb fire the G.-W. "Dreadnought" anchored peacefully among the long grass. Their last flight ended in a rather severe bump; however, beyond a broken strut or two no serious damage resulted, and the "Dreadnought," gifted with a sympathetic second sight, amiably blew up herself with great éclat. The evening's entertainment ended with an excellent display of fireworks.

On Saturday afternoon the attendance was, as usual, large, and the flying was, as usual, excellent. M. Noel, whose record is peculiarly free from serious accidents, had the bad fortune to secure two mishaps during the afternoon, one of which put the G.-W. Maurice Farman out of action with a smashed chassis and sadly buckled wings. He was turning, after flying down wind, with a passenger, when the tail, weighted with electrical fittings for the night flying, touched the ground and swung the machine sideways. After the accident an official was heard informing a group of receptive Pressmen that "Mr. Noel was making a steep descent when his tail touched the ground and turned the machine over."

Neither M. Noel nor his passenger were hurt, but the latter appears to have had quite enough of aviation for the time being; at any rate, when invited to re-occupy his seat in the broken machine for photographical purposes, he declined in a very firm voice, stating that he could not induce his hair to lie down after his experience.

Two races took place during the afternoon, a cross-country handicap and a speed handicap. In the first race the turning point was changed from Elstree to Mill Hill, which is nearer and keeps the machines in sight all the time; four double journeys being made instead of the usual two. Lieut. Porte started scratch in the big Deperdussin (100-h.p. Anzani), Sig. Nardini with 40 secs., in his Deperdussin (50-h.p. Gnome), Mr. Hall, with 2 mins. 16 secs., in his Blériot (50-h.p. Gnome), M. Verrier, in a Maurice Farman (70-h.p. Renault), with 2 mins. 40 secs., Mr. Brock, in a Deperdussin (35-h.p. Anzani), with 5 mins. 14 secs., and Mr. Cheeseman, in a G.-W. biplane with 9 mins. 18 secs.

Mr. Cheeseman's machine refused to climb, and after two circuits in the aerodrome to try and get high enough to leave, he received a gust which caused a sideslip, from which he recovered cleverly only to find himself heading for the fence, which he jumped, and landed in a field. It was when trying to bring this machine back that M. Noel had his second trouble while attempting to get up out of long grass and jump the fence again. This time little damage was done, and the pilot was again unhurt.

The remaining racers made their first return in the same order in which they set out. On the second return Mr. Hall and Lieut. Porte both went inside the second pylon and were disqualified. The finish was exciting, M. Verrier crossing the line with Lieut. Porte right over his head and only inches behind; the latter, however, was disqualified and so the second man in was Sig. Nardini. Mr. Brock was third, the times being respectively 26 mins, 38 secs., 26 mins. 56 secs., and 27 mins. 58 secs. M. Verrier thus received the North London Cup and £15, while Sig. Nardini received the £5 presented by Miss Trehawke-Davies. Lieut. Porte's passenger during this race was Capt. Massy, who is to command the new Indian Army Flying Corps when it is formed.

The Speed Handicap was a very fine race indeed, although there were but three entries. Sig. Nardini was scratch, M. Verrier received 1 min. 15 secs., and Mr. Brock 1 min. 32 secs. Mr. Brock led throughout the eight laps and won in 14 mins. 51 secs., thus securing the trophy and £20. Four seconds behind him came Sig. Nardini and M. Verrier, the little "Dep." rapidly overtaking the big biplane. It appeared to be a case of inches. Right on the line, Sig. Nardini, diving, passed immediately under M. Verrier and snatched the £5 note off his elevator by 3/5 of a second, his time being 14 mins. 55 secs., and M. Verrier 3/5 more.

Many interesting flights took place during the afternoon, Marcel Desoutter, looking very fit, drove himself over in a little car and went for a fly with M. Verrier. Mr. Sidney Pickles took a British-built Caudron (45-h.p. Anzani, 6-cylinder) for its maiden flight and gave a beautiful exhibition, banking and diving in a manner not usually associated with these machines. Mr. Ewen beamed, and even Mr. Hunter was moved to express his admiration. Mr. Temple's Caudron was also in the air, and a third Caudron machine, piloted with his usual skill by M. Beaumann, made a long and high flight. Mr. Hall and his Blériot disported themselves playfully among the pylons.

Mr. Grahame-White must have got into touch with the management of Nature, for, as evening drew on, a fine tall dado of inky cloud was provided from the north round to the west, surmounted after sunset by a rose-coloured luminescence which was not merely decorative, but perfectly magnificent, the illuminated enclosure-rails and pylons telling splendidly. The aviators who performed in the evening were Messrs. Noel, Manton, and Nardini, the latter speeding round the course like a well-trained comet. It is a weird and unique sight—this night-flying.

Mr. E. T. Willows' finely stream-lined little gas-bag was towed around the aerodrome by motor-car and shown up against the black background and the fading rose by searchlight, which gave the brilliant yellow envelope a luminous effect. The whole colour-scheme was most daring and modern, and considered from an artistic standpoint this striking spectacle was extremely effective, but considered as a demonstration of Mr. Willows' capabilities or of the effect and behaviour of an airship, it was a dreadful affair, for the little envelope, unaccustomed to the leash, dived and rolled and stood on end in the wind, and behaved, in general, so like a harpooned aerial whale that even the most magnanimous members of the public treated the incident rather as a comic interlude. "He must be a fine fellow, this Mr. Willows, if he invented *that*," observed one unsympathetic person. It is fortunate for Mr. Willows that his reputation does not rest with those who are unfamiliar with his earlier achievements, for this unrealistic though amusing display would, in that case, have taken a deal of "living down." As things are, however, one may be content with exhorting the casual Hendonians to forget this child's play and to await the arrival, during the summer, of Mr. Willows' real airship before settling in their minds precisely how fine a fellow he is.

Later in the evening the "Dreadnought" repeatedly blew up her after-turret, sent up her artistic signals of distress, and fired shells most picturesquely from her starboard hawse-hole, and the evening's entertainment was brought to a close with a firework display which alone was well worth the journey to see.

Sunday's flying was quite up to the usual standard of excellence without being particularly exciting. Early in the afternoon Mr. Hamel started out on his brand new 80-h.p. tandem Blériot to go to Brooklands, but running over a rut the machine bounced and came down so hard that the propeller tip touched the ground and broke. By some weird circumstance the small broken piece of the propeller, no bigger than the palm of one's hand, got into the engine housing and twisted the tappet rods

of the cylinders round so that they touched the aluminium casing. The engine was so thrown out of balance that it shook the front bearing loose also. As a result Mr. Hamel had to make the trip to Brooklands on the old school Blériot known as the "elderly and respectable." He had a very uncomfortable journey because the machine steadfastly refused to climb, and because the warp is practically negligible, so that all the stabilising has to be done with the rudder.

When Mr. Hamel returned in the afternoon his descent was for him a most staid and sober affair, and his remarks when he got out of the machine were anything but complimentary to its safety. It really is time the machine was sent back to Paris and rebuilt.

By the way, I heard that M. Blériot visited the school on Thursday last, and that there are prospects of things being considerably brisker in the future. There is undoubtedly plenty of room for a good Blériot school in this country if only the Blériot people in France will spend some money on it and give their pupils the same opportunities as they get at Buc or Pau.

Soon after Mr. Hamel left, Mr. Hall was out and collapsed his under-carriage on landing owing to his being picked up by a gust and then dropped again when the machine had lost its way.

M. Verrier was testing a new Maurice Farman the Grahame-White people had just bought, and took up a number of passengers on his own machine. Lieut. Porte, R.N., flew with his usual excellent judgment on the 100-h.p. Deperdussin and Mr. Brock gave one of his typical displays on the little 35-h.p. Deperdussin. Mr. Pickles made another very fine flight on the new British-built Caudron with the latest type 6-cylinder 35-40 h.p. Anzani. The machine seems to be quite as powerful as the old 60-h.p., and Mr. Pickles tells me that the work done by the Blondeau-Hewlett firm in building the machine not only gives him every confidence in its strength, but actually makes her control better. M. Beaumann was also up very high on a 35-h.p. Caudron, coming down with a fine spiral, and the flying was brought to a close by several flights by Mr. G. L. Temple on another 35-h.p. Caudron.

A Great Day for Hendon.

On Saturday, June 21st, the Midsummer Meeting will be held at the London Aerodrome. Two races have been arranged, the first a Grand Speed Handicap in two six-lap heats and an eight-lap final, for a trophy and £20, the second man to receive £5. The second race will be a cross-country handicap, to Elstree and back twice (about 16 miles in all) for the North London Cup and £15, the second man to receive £5.

On Wednesday, June 25th, the President of the French Republic, M. Poincaré, will visit Hendon and there will be a Fête of Flowers and Aviation for the benefit of the enlargement fund of the Institut Français de Londres and the French Charities of London. At 10.30 a.m. a procession of decorated cars will pass Marble Arch House and then proceed to Hendon. At 2 p.m. there will be a display of exhibition flying and racing, including the first aerial battle of flowers. This will be followed by a terrestrial battle of flowers and a series of six competitions for the best decorated cars.

More Sopwith Records.

On Monday last, Mr. Hawker and the Sopwith biplane put another British record to their credit. This time it is Major Gerrard's height record with pilot and two passengers, made on a Government-built "B.E.," with 140-h.p. Gnome engine, which has been beaten. Mr. Hawker with two passengers on a Sopwith with only an 80-h.p. Gnome raised the record from 8,400 ft. to 11,200 ft.—subject, of course, to verification of the barographs. Later he went up with one passenger to 13,000 ft., thus beating his own record of 11,450 ft. without a passenger. On the previous day he had been up to 8,500 ft. with two passengers, but did not consider that a sufficient beating for the State-assisted record, although made with nearly double the power. The figures appear to represent a very measure of the efficiency of the output of Government civilian departments in comparison with individual enterprise—this, of course, without drawing any comparison between the individual pilots in each case, for the R.F.C. pilots are irreproachable.

The House of Perrin.

One hears, and the world, too, will be pleased to hear, that a son and heir has been born to Mr. Harold Perrin, whose name will ever be identified with the progress through history of the Royal Aero Club. If, by the grace of the beneficent fairies who, one was told when young, really rule this world, all the gifts of the father descend on the son, future generations will have no cause for regret.

Racing at Brooklands.

At the Brooklands Automobile Racing Club's Midsummer Meeting on June 21st, an aeroplane handicap will be flown, starting at 5.40 p.m.

Aviation on the South Coast.

There are comparatively few people nowadays who have not seen an aeroplane, yet the general enthusiasm prevalent in Bognor, on the occasion of Mr. Pashley's visit last Saturday, was reminiscent of the early days. Taking six circuits of the aerodrome to reach 300 ft. on account of the many air pockets, he left Shoreham against a head wind and alighted at Bognor on the beautiful stretch of sand half an hour later. After lunch, he took up Mr. E. L. Dower, representing "The Aeroplane," who photographed the town from above. Mr. Pashley gave a fine display during the afternoon, and the crowded front and sands thoroughly appreciated it. Among the many passengers taken up were three ladies, including Mrs. Taylor, of the Beach Hotel. Unfortunately, despite the efforts of perspiring officials, the crowd was troublesome, and often Mr. Pashley had difficulty in landing. Spectators do not yet realise the room an alighting machine requires, and that, all precautions taken are very necessary to prevent an accident. The aviator flew back to Shoreham, accompanied by Mrs. Mitchell, owing to the encroaching tide; the journey took 25 mins.

Brighton is rapidly becoming increasingly popular among aviators, and hardly a day passes without one machine or another flying along the front. The late Lieut. Kennedy, R.N., who flew from Eastchurch on a Sopwith biplane on Monday last week, passed over the town at 800 ft., and, again, on his return, in the evening at a higher altitude, obviously having a nasty struggle with the gusty wind. The ill-fated Maurice Farman, flown by Lieut. H. Glanville, R.F.C., with Lieut. Small, R.F.C., as passenger, visited the town on Friday last, and two miles outside had to make an impromptu descent through engine failure. The machine, on alighting, crashed into the wall of Hangleton Church, and was completely wrecked, though the aviators luckily escaped unhurt.

By far the most interesting event of the week was the testing of the 100-h.p. Avro waterplane off Brighton last Saturday. Mr. Raynham flew it from Shoreham in the morning, accompanied by Lieut. Seddon, R.N., and alighted opposite Volks' Hangar. Then, with the owner, "Captain X.," as passenger, he took it up for its tests, which included flying for an hour with tanks full, and alighting on the water in a 20-mile an hour wind. During the duration test Mr. Raynham gave a splendid display, circling the piers, and every now and then gliding from anything up to a thousand feet. Having successfully passed these tests, the machine was taken ashore and dismantled prior to being crated to Germany.—E. L. DOWER.

Captain Sanders in the North.

Captain Sanders, late of Beccles, has been quietly pursuing his experiments in Northumberland of late. He recently had what has become known in his family as "his annual smash," this time with a waterplane. It was blowing half a gale, and he finished up with only the float in the air, the top plane and engine under water embedded in sand, the bottom plane not even strained, the top one matchwood, the propeller broken, and the engine full of sand and sea-water. He himself, he says, was only wet and uncomfortable. From a photograph kindly sent by Miss Ivy Sanders, one gathers that the machine retains the twin front elevators of the original Wright type, with the girder arrangement of combined skids and elevator struts seen in the Sanders machine at Olympia in 1911. There is now a large tail also, with twin rudders, and lateral balance is by ailerons between the wings. A single central float is used, with wing-tip floats.

The National Aerial Defence Association.

(Founded by the Navy League.)

The following letter has been sent to the Press:—

"The Executive Committee of the National Aerial Defence Association at its meeting on the 4th inst., decided to take immediate steps to convene public meetings throughout Great Britain under the auspices of the Lord-Lieutenants of Counties, Lord Mayors and Mayors of the chief cities and towns, with the object of educating the public of the country on the immediate needs of an adequate Aerial Defence policy.

"It was decided further that in consultation with local organisations and with the general support of the Royal Aero Club Flying Demonstrations should be organised during the summer months wherever facilities can be made available for the purpose.

"In the interests of the safety of pilots the Committee also took into consideration the pressing necessity of providing generous support to give effect to the recommendations of the Royal Aero Club Accidents Investigation Committee.

"In order to effectively carry out this preliminary programme the Executive Committee urgently require at once a sum of not less than £10,000.

"An earnest appeal is therefore made to the generosity of the British Public on behalf of this great national endeavour to remedy the unsatisfactory position in which this country stands with regard to its aerial defence.

"Subscriptions and donations will be gratefully acknowledged by the Honorary Treasurer, Mr. V. Biscoe Tritton, if addressed to him at the offices of the Association, 11, Victoria Street, S.W., or they may be forwarded to Messrs. Barclay and Co., or any of their branches.

"We have the honour to be, Sir,

Your obedient Servants,

BLYTH and G. W. TRUSCOTT, Trustees.
TULLIBARDINE, President, Royal Aero Club.
EDWARD BEAUCHAMP, Chairman of Lloyds.
ROBERT YERBURGH, President of the Navy League.
R. M. RUCK, Chairman, Aeronautical Society of Great Britain.
H. C. L. HOLDEN, Royal Aero Club.
LIONEL DE ROTHSCHILD.
P. J. HANNON, Honorary Secretary."
V. BISCOE TRITTON, Honorary Treasurer.

The Aeronautical Society.

The following have been elected members of the Society:—Major-General S. B. von Donop; E. Temple Robins; C. G. Grunhold (assoc. member).

The following gentlemen have been nominated as representatives of the Society on the Executive Committee of the National Aerial Defence Association:—Col. H. E. Rawson, C.B., R.E.; Dr. R. Mullineux Walmsley; Mr. B. Woodward.

The offices of the Society will be closed for the summer vacation June 21st-July 5th, inclusive.—B. G. COOPER (Sec).

Members of the Aeronautical Society have now received ballot papers for the election of twenty-two Associate-Fellows, and these ballot papers must be returned by Saturday next, the 21st. It is to be noted that Rule 4 (b) states:—"Associate Fellowship of the Society shall be reserved for those who have attained to an acknowledged position in the Science of Aeronautics." On these grounds it is hard to discover more than two or three names among the twenty-two who are actually eligible for election. Several of the names are quite unknown to most people connected with aviation, and the list includes the names of a number of distinguished officers of the Navy and Army who, though eminently efficient from a Service point of view, are scarcely entitled to be reckoned as scientists. The fact that an artillery officer has raised his battery to a high state of efficiency, and has memorialised the War Office on the defective quality of the cordite supplied, would scarcely qualify him to be an Associate-Fellow of the Society of Chemists, or whatever is the scientific body which is responsible for the production of high quality explosives, nor need such an officer necessarily be an authority on scientific ballistics. The case seems somewhat analogous to that of the Aeronautical Society.

No doubt the finances of the Society make it desirable that as many Associate-Fellows as possible should be elected, as they pay larger subscriptions than do the ordinary members, but if the Society is to maintain its status as a purely scientific body the qualifications for Associate-Fellowship should be rigidly maintained, or else the rule stating those qualifications should be altered.

As a committee of the Royal Aero Club to control aviation in general the list of the names on the ballot paper would be excellent, but as a body of acknowledged scientists the names on the list are not convincing.

Kite and Model Aeroplane Association.

The Kite and Model Aeroplane Association, judging by the formidable list of fixtures which they have announced, is in a highly flourishing condition.

Official model trials for records purposes will take place on July 26th, Wimbledon Common; August 30th, Aero Models' Association ground, northern; September 27th on the Leytonstone Club's ground; October 25th on Wimbledon Common; November 22nd on the Paddington Club's ground

Beside these trials, many competitions for prizes and challenge cups have been arranged, also on Saturdays. At 3 o'clock p.m., June 28th on 100-Acre Field, Greenford, for duration, Gamage challenge cup and gold medal, silver and bronze medals. July 5th, on same ground, for duration, weight-carrying, and stability, £3, silver and bronze medals. A junior competition will also be held for 16-year-olds, prizes, a 45s. model, a 15s. model, a silver medal and a book. July 12th, on same ground, for steering, a cup, silver and bronze medals. July 19th, on Wimbledon Common, a kite-flying competition for the Baden-Powell Challenge Shield, gold, silver and bronze medals. August 4th (Bank Holiday), at 2 p.m., on Littlehampton Common, a kite-flying competition for the Littlehampton Cup, an antimony rose bowl, and a silver-plated tankard. A junior event will also take place with six kites as prizes and a book to the winner as well. A model aeroplane competition will be held at 3.30 p.m. for the Littlehampton trophy, a rose bowl and a tankard. August 9th, at the Welsh Harp, Hendon, R.Ae.C. model hydro competition, duration and stability, for £5 5s., 2nd and 3rd prizes to be announced later. Wednesday, August 13th, 2.30 p.m., at London Aerodrome, Hendon, efficiency competition, for challenge trophy and plaque, silver and bronze medals. August 16th, at 100-Acre Field, Greenford, duration and stability for Wakefield gold challenge cup and gold medal, silver and bronze medals August 23rd, on Wimbledon Common, kite-flying competition for Trollope challenge cup and gold medal, silver and bronze medals. August 23rd, on Wimbledon Common, long flight competition for Ornithopters, first prize £5. September 6th, at same place, kite-flying competition for Michelin challenge trophy and silver medal, a second silver medal and a bronze one. September 13th, at Greenford, length of flight and stability, for silver challenge cup and gold medal, silver and bronze medals. September 20th, Rushmere Pond, Wimbledon Common, duration and steadiness of single-screw hydro-aeroplanes for two cups and a bronze medal. September 20th, 01 Wimbledon Common, junior distance competition, for silver medal, 15s. aeroplane, 10s. worth of model material, and a book. October 4th, novices' duration and stability competition, for £1 worth of requisites, silver and bronze medals. October 11th, at Greenford, duration and stability of single-screw tractor, for trophy, bowl and bronze medal. October 18, at Welsh Harp, Hendon, duration and stability of hydro-aeroplanes for rose bowl, silver and bronze medals. October 25th, on Wimbledon Common, kite-flying competition for silver cup, a kite outfit, and a bronze medal. A junior competition will also be held, 45s., 15s., 10s., and a book.

Further particulars may be obtained from the hon. secretary of the Association, Mr. W. H. Akehurst, 27, Victory Road, Wimbledon, S.W.

A New Aerial Defender.

One gathers on more or less reliable authority that Mr. McCallum More, formerly of Brooklands and elsewhere, is interested in the scheme for aerial defence by means of "wireless" operating on the magnetos of aeroplane engines, a proposition which was reported last week as having been sympathetically received by Colonel Seely.

The Latest All-Steel Isaacson Engine.

For over twelve months the Isaacson Radial Engine Co., Ltd., have been experimenting with a new type of radial engine which, after passing through a series of duration tests, has now finally been put on the market. The original Isaacsons gave plenty of power, but in tests disclosed certain defects which Mr. Isaacson at once admitted and set to work to remedy. This new engine seems to have overcome them all.

The chief points the designer, Mr. R. J. Isaacson, has had in view are :—(1) To produce an engine as simple as possible and with the fewest working parts, so that reliability is obtained; (2) to do away entirely with aluminium and only use the finest steel and steel alloys; (3) To obtain extreme lightness by design, and not merely by lightening the ordinary motor-car type of engine; (4) to abandon the use of all white metal bearings and use ball-bearings throughout—a most important matter when engines have to be handled by mechanics who are not skilled in scraping bearings true, as is the case with engines for Service purposes; (5) to so construct the engine that it can easily be dismantled for inspection without having to disturb the ignition or valve gear; (6) to make an engine that would self-start and would only require cleaning about as often as an ordinary car engine; (7) to fit standard Gnome frames and not upset the balance of any aeroplane.

All these points have been successfully obtained in the new type. The engine is a seven-cylinder stationary radial, and is air-cooled. The weight of the engine in complete running order is 187 lbs., including magneto, oil-pump, and carburettor. When made to fit into ordinary standard Gnome frames the weight is 196 lbs.

The maximum brake-horse-power obtained is 67.9. This is obtained at the remarkably slow speed of 1,080 r.p.m., so that high propeller efficiency can be obtained. The best speed of running the engine, however, is 1,100-1,125 r.p.m., when the b.h.p. has been found to be about 67.

The petrol consumption, taken over a test of four hours, has been found to be 3.8 gallons per hour, the b.h.p. being 64. The weight per b.h.p. works out at 2.73 lbs.

The cylinders are fixed in two circular steel crank-case rings by spigots turned solid on the cylinders. The cylinders are made of nickel-steel and turned from the solid. Where the boss for the spark-plug comes, the metal which cannot be removed by turning is milled away by a special machine. The weight of a cylinder is 5 lbs. 10 ozs.

The covers are bolted to the two crank-case rings. These support the crank-shaft on ball-bearings rigidly in the centre. The front cover contains a special distributor for self-starting and running, which sets itself when the cover is replaced. The back cover contains the valve-gear and the magneto drive. The back cover bolts to a back plate which carries the magneto, oil-pump, etc., and also bolts to the frame which carries the engine. The back plate is also fitted with a hollow stalk, if required, so that the engine will fit exactly into the standard frames, and the engine can be taken out of this frame without upsetting the timing of magneto or disturbing the valve-gear or oil-pump.

When it is required to inspect the engine it is only necessary to remove 14 nuts on the front cover and one nut on the crank-shaft, and the inside is exposed. This operation takes about six minutes. The pistons can be taken out from the front after the front half of the shaft has been parted and removed by means of a special tool. The link pins are then pulled out, and the pistons can be taken out of the cylinders. These pistons can be taken out and replaced without removing the cylinders or any further dismantling.

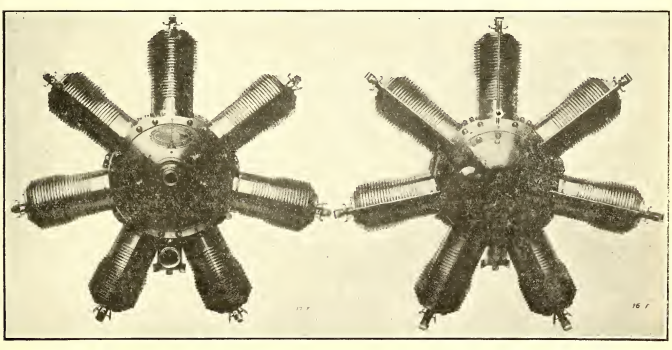
If so desired, the crank-case rings, with the cylinders fixed, can be removed from the back cover by taking off 14 nuts. This does not in any way upset the timing of magneto or valve-gear. The entire operation of completely dismantling the engine can be done in 22 mins., and of reassembling again in running order in the same time.

Any exhaust valve can be inspected by removing the large-diameter nut, when valve-seat, valve, and levers will come out together. No adjustment of tappet rod is necessary when replaced.

The inlet valves, which are of special form, will work equally well without springs, but these are fitted to facilitate easy starting. The valves depend partly on inertia for their action.

Starting is by a special form of distributer. The engine will self-start with batteries or a special magneto. This is coupled to a special fitting on the wheel driving the magneto, which sets itself when the magneto is set. The high-tension lead from coil or magneto is fixed to the terminal of the distributer, which automatically sets itself for retard or advance without any moving parts. To start it is only necessary to pull the engine over to fill the cylinders with gas with the throttle nearly closed, and then switch on. As soon as the engine starts, switch over to the magneto and open the throttle. Very slow running can be obtained by nearly closing the throttle, but by running on the batteries—as a very retarded spark is the result—a very slow speed can be obtained.

No float chamber is used on the carburettor as it is obvious that any storage of petrol near the carburettor and beyond the petrol cock, is always liable to catch fire. The carburettor simply consists of a pipe with a perfectly airtight valve and petrol cock. This valve and cock are coupled to levers which



Front and back views of the new "All-Steel" Isaacson Engine.

form the control, and by which a perfect mixture under any circumstances and in any quantity can be obtained. Moved together the engine can be throttled or opened out; moved separately the mixture can be varied. Petrol can be shut off entirely at the jet, allowing no petrol to accumulate and burn (as in a float chamber), and if another cock is fitted near the pilot there is no possibility of fire.

In addition, a special perforated plate is fitted inside the engine and acts as a gauze, on the principle of the Davy lamp, and is strong enough to resist any back-fire in the crank-case. The ordinary gauze has been found too weak, and is absolutely useless.

If, after actual use on aeroplanes, the engine stands up to its brake tests, the company will have produced a British engine more than able to hold its own against any foreign product, and the makers should soon be very busy. Mr. Isaacson would do well to turn his attention at once to the production of an engine of 150 to 200 h.p. on similar lines.

Active Policy at Shoreham.

Mr. G. Arthur Wingfield, the chairman, and Mr. Henry Gonne, secretary, of the Sussex County Aero Club, write:—"We have the honour to inform you that arrangements have now been completed with the National Aerial Defence Association for a public demonstration to be held in the Hove Town Hall on June 20th, 1913, at 8.30 p.m., with the object of calling the attention of the people of the county to the critical situation with which this country finds itself confronted in its unpreparedness for aerial defence. The Mayor of Hove will preside.

"It is hoped that as a result of the meeting, a branch of the National Aerial Defence Association will be established for the County of Sussex, and active steps will be taken following immediately upon the meeting to develop the organisation in all parts of the county.

"The meeting will be addressed by Mr. Lionel de Rothschild, M.P., and Captain Walter Faber, M.P., and everybody in the County of Sussex interested in this vital public movement is requested to make early application for admission to the meeting; and in the case of those unable to attend an expression of sympathy with its objects will be appreciated.

"The meeting is being organised by the Sussex County Aero Club, and we shall be glad to place every information at the disposal of those interested."

Mr. Wingfield also writes, as chairman of the Brighton-Shoreham Aerodrome, Ltd.:—"With regard to the criticisms of the Aerial Navigation Act and the conduct of the Government in the matter of prohibited areas which is being made by the Royal Aero Club, the National Aerial Defence Association, and other aerial associations, I think it is right as chairman of the company to point out that the statements that are being made in the Press are calculated to do this aerodrome great harm. My directors can only hope that they are made unintentionally or in ignorance of the existence of this aerodrome, which is not in a prohibited area.

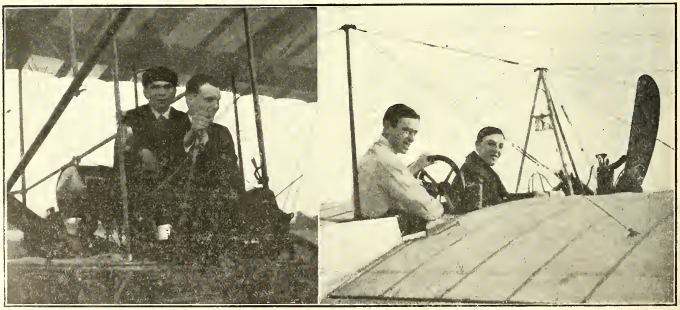
"When it is stated that there is no place on the South Coast suitable for experimentalising with and manufacturing hydro-aeroplanes it is high time that this company protested, because it is one of the special features claimed by this aerodrome that it is eminently suited for that branch of the aeronautical industry. The site of the aerodrome when selected many years ago for aviation was chosen because of its proximity to the sea, and still more because it was contiguous to a large stretch of inland river water also communicating with the sea through Shoreham Harbour. The proof of its suitability lies in the fact that at the present time manufacturers of hydro-aeroplanes are successfully experimentalising with their machines on the water contiguous to the aerodrome.

"My directors are at a loss really to appreciate why this site has been altogether ignored in the matter of selecting a site for the "Daily Mail" Contest, and why various clubs and associations who ostensibly claim to make it a part of their programme to assist those actively engaged in the industry, should, in the matter of aviation competitions, go out of their way to apply to the Government for a place in prohibited areas, when, by so doing, they divert business which might be of assistance to persons who have spent thousands of pounds in the industry."

[One gathers that Southampton was chosen as the proposed starting place partly because of the enormous area of land-locked water and partly because of the large population in the vicinity, which also includes many naval and military personalities. Admitting the superior claims of Southampton as a starting place on those grounds, Shoreham is too close for a "control." Apart from this, however, Shoreham is an excellent locality for waterplane flying.—Ed.]

The Latest Reviews.

The "Review of Reviews" continues to maintain its high literary level, and its omnivorous outlook. The current issue contains quotations from the article in the "British Review" by Mr. Grahame-White and Mr. Harry Harper, as well as from a symposium on aviation and progress taken from "La Revue." Also there is reference to Mr. Gerard Fiennes' recent article in the "Pall Mall Magazine" on "Submarines and Aeroplanes," and a sensible suggestion is made in a notable article entitled "Cement or Gunpowder," that the self-governing Colonies should start at once to organise their own air fleets. As usual, the "Review of Reviews" provides a liberal education on everything that is going on in the world.



AT THE VICKERS SCHOOL:—Mr. Knight (school pilot) in the passenger seat, and Mr. A. A. Knight, on a school biplane. Lt. Blatherwick at the wheel, with Mr. Orr Paterson, on a Vickers all-steel monoplane.

The Week's Work.

MONDAY, June 9th.

R.F.C., Central Flying School.—Freshening West wind and bright, but cloudy forenoon; dull, very strong gusty wind later. On Avro 430, Maj. Fulton with Lt. Fuller 35 mins, with Lt. Corballis 45 mins; Lt. Fuller 8 and 15 mins; Lt. Corballis 20 mins; Lt. Wanklyn with A.B. Townsend 25 mins. On Avro 432, A.M. Higginbottom with Sergt. Jarvis 30 mins, with A.M. Smyrk 5 mins; Sergt. Jarvis 30 mins straights alone. On Avro 433 Lt. Reilly 30 mins; Lt. Morgan 40 mins; Lt. Brodribb 45 mins; A.M. Higginbottom with A.M. Baldock 35 mins. On Avro 448 Maj. Fulton with Lt. Maude 25 mins, Lt. Maude 10 mins.

On M. Farman 403, Lt. Wilson 37 mins; Lt. Gill 40 mins. On M. Farman 411, Lt. Shepherd with P.O. Tigrphst. Hogan 35 mins, with E.R.A. Case 35 mins; Lt. Gaskell 20 mins; Lt. King 15 mins. On M. Farman 427, Lt. Shepherd 9 mins; Lt. Pretyman 43 mins; Lt. Bourke 20 mins, owing to engine trouble landed at Amport. On M. Farman 426, Lt. Stopford with Sergt. Porter 20 mins, with Ldg-Smn. Clemens 25 mins; Cpt. Fawcett 25 mins; Lt. Harvey-Kelly 23 mins. On M. Farman 431 Maj. Trenchard 15 mins.

On B.E. 416, Cpt. Salmond 10 mins, Lt. Edmunds 62 mins, Lt. Birch 10 mins, Cpt. Massy 20 mins. On B.E. 417, Lt. Stopford 10 mins, Lt. Newall 19 mins, Lt. Rodwell 20 mins, Lt. Fowler 25 mins, Cpt. Hoare 25 mins. On B.E. 442, Cpt Salmond 22 mins, with Lt. Newall 40 mins, with Lt. Harvey-Kelly 30 mins.

On Short 402 Lt. Vaughan 15 mins; Maj Gerrard with Lt Agar 30 mins; Lt. Adams 15 mins.

On H. Farman 412, Maj. Gerrard with Lt. Mills 8 mins. On H. Farman 445, Maj. Gerrard 10 mins alone.

Hendon.—At Grahame-White School, 5 a.m., Lt. Evill on No. 7 straights, Lt. Eales, Mr. North, Mr. J. Russell with instructor. Sir A. Sinclair alone.

At Deperdussin School, 7 a.m., Lt. Porte from Brighton under the hour with Lt. Cochrane, R.N., Col. Smyth and Lt. Brock on No. 3 straights. Mr. Spratt testing 60-h.p. (repaired engine) to 2,000 ft. In evening up again on same to 2,300 ft. in very strong wind. Splendid performance.

At Blériot School, Mr. Reilly for brevet in morning but had engine trouble. Mr. Gower and Cpt. Cox rolling. Mr. Williams off ground first time.

At W. H. Ewen School, 4.30 a.m., on 35-h.p. Caudron No. 1 M. Baumann with Lieut. Bewes. On 35-h.p. Caudron No. 2 Mr. F. Goodden with Messrs. Pendlebury, Jagenberg and Cowling.

At Temple School, 4.10 a.m., Mr. Temple flew down Collindale Avenue to wake pupils. Messrs. Vaile, Ritchie, Lance and Lt. Ambler 10 mins each on Caudron. Mr. Temple later 15 mins.

Brooklands.—At Bristol School, Mr. Bendall test, then with Mr. Powell and Mr. Howard.

At Vickers School, Pilot Knight and Messrs. Brancker and Beevor on No. 19 biplane. Mr. Barnwell on biplane No. 20. Mr. Knight and then Mr. Mitchell on No. 2 mono.

Salisbury Plain (Bristol School).—Mr. Pixton test. Lt.-Col. Hamilton, Lt. Burns, Mr. Gipps and Mr. Adams each alone. Mr. Delaplaine landings. Mr. Pixton with Lt. Osmond, R.N., Mr. Pizey testing new school biplane and with Lt. Miley, R.N., and A.M. Pratt.

Brighton-Shoreham.—Lt. Porte, R.N., with Lt. Cochrane left for Hendon on Dep. Lt. Kennedy, R.N., arrived on 80-h.p. Sopwith from Eastchurch; returned in evening in high wind.

TUESDAY, June 10th.

R.F.C., Central Flying School.—Very strong, gusty West wind. Dull and wet. No flying.

Hendon.—At Temple School, 4 a.m., under Mr. Temple, Messrs. Vaile, Lt. Ambler, Ritchie, Penny and Lance 12 mins each on Caudron. Mr. Temple later 15 mins.

Stamford, N. Hants.—Mr. B. C. Hucks on the 70-h.p. Blériot flew cross country Stamford to Boston in high wind. Damaged propeller on landing. Quickly replaced.

WEDNESDAY, June 11th.

R.F.C., Central Flying School.—Fine, clear, bright but cloudy. Freshening west wind. On Avro 430, Lt. Todd 35 mins; Lt. Hordern 30 mins; Lt. Morgan 20 mins; Lt. Fuller 15 mins; Lt. Corballis 30 mins. On Avro 432, Lt. Small 25 mins. On Avro 433, Maj. Fulton with Cpt. Webb-Bowen 10 mins; Cpt. Webb-Bowen 8 mins; Lt. Picton-Warlow 30 mins. On Avro 448, Lt. Reilly 25 mins; Maj. Fulton with Lt. Maude 5 mins, with Lt. Corballis 15 mins; Lt. Corballis 15 mins.

On M. Farman 403, Lt. Wilson 18 mins; Lt. Cutler 28 and 30 mins; Lt. Bourke 23 mins; Lt. Sitwell 13 mins; Lt. King 5 mins; Sergt. Stafford with E. R. A. Case 7 mins. On M. Farman 411, Lt. Sitwell 15 mins; Lt. Noel 20 mins; Lt. Gill 21 and 28 mins; Lt. Wilson 25 mins; Lt. Gaskell 5 mins. On M. Farman 427, Lt. Bourke from Amport back to Upavon 30 mins; Sergt. Stafford 6 mins; Lt. Gaskell 17 mins; Lt. Pretyman 24 mins; Lt. King 25 mins. On M. Farman 426, Cpt. Salmond with Sergt. Porter 15 mins; Lt. Stopford with A.M. Gallie 15 mins. On M. Farman 431, Maj. Trenchard 17 mins.

On B.E. 417, Lt. Stopford 8 mins alone, with Sergt. Rigby 5 and 15 mins; Lt. Rodwell 20 mins. On B.E. 442, Cpt. Salmond 5 mins alone, with Cpt. Fawcett 14 mins; Lt. Newall 18 mins; Cpt. Salmond with Lt. Harvey Kelly 10 mins. On B.E. 446, Cpt. Salmond with Lt. Harvey Kelly 17 mins. On Short 402, Lt. Vaughan 40 mins; Lt. Adams 55 mins. On H. Farman 412, Maj. Gerrard with Lt. Mills 5 and 12 mins; Lt. Mills 13 mins.

Hendon.—At Grahame-White School, 5 a.m., Lt. Evill straights, Lts. Eales and Bodam-Whetham straights with instructor.

At Deperdussin School in evening Mr. Spratt on 60-h.p. to 5,000 ft., and with Cpt. Cox to 1,500 ft.; came down with burst oil-pipe.

At W. H. Ewen School, at 4.30 a.m., Pilot M. Baumann test on 35-h.p. Caudron. Too windy for pupils. During afternoon Mr Sydney Pickles several flights on new Caudron with 40-45 h.p. cylinder Anzani to 5,000 ft.

At Temple School, 3.15 a.m., test flight, handed over to Lt. Ambler, later taking him as passenger. Wind rising prevented more work. Mr. Temple several flights during day.

At Vickers School, Pilot Knight on biplane with Mr. Elsdon (new pupil). Wind very bumpy.

Salisbury Plain (Bristol School).—Mr. Pixton with Lt. Miley (twice), Lt. Osmond, Lt. Barnby (once), and A.M. Pratt (twice). Later Mr. Pixton testing new biplane, Mr. Pizey testing new "sociable" mono, then with Lt. Osmond, R.N., and Lt. Barnby. Fine flights by Lt.-Col. Hamilton, Lt. Burns, Mr. Adams and Mr. Gipps. Maj. Hewetson and Mr. Delaphane taxiing on single mono under Mr. Pizey.

Boston, Lincs.—Mr. B. C. Hucks on 70-h.p. Blériot gave exhibitions in fair wind, taking passengers.

Brighton-Shoreham.—At Avro School, Mr. Geere, new manager of Avro school, straights on Avro (Green). Later Mr. Shaw straights.

Hornsea.—Mr. Stanley Adams in "Water Hen" on Hornsea Mere testing.

THURSDAY, June 12th.

R.F.C., Central Flying School.—Fine, clear, moderate West wind, freshening to strong and gusty, then calmer in evening. On Avro 430, Maj. Fulton 5 mins alone, with Lt. Maude 30 mins, Lt. Maude 20 mins; Lt. Morgan 12, 27 and 35 mins; Lt. Wanklyn with A.B. Townsend 22 mins; Lt. Picton-Warlow 35 mins; Lt. Reilly 15 and 20 mins; Lt. Fuller 15 mins; Lt. Small 20 mins over Tidworth, etc.; Sergt. Jarvis 10 mins. straights alone, 8 mins first circuit alone; Lt. Corballis 20 mins; Lt. Brodribb 20 mins; A.M. Higginbottom with A.M. Baldock 30 mins, with A.M. Butcher 15 mins, with A.M. Smyrk 5 mins. On Avro 432, Cpt. Webb Bowen 7, 10 and 33 mins; Lt. Reilly 30 mins. On Avro 433, Lt. Brodribb (twice) 30 mins; Lt. Wanklyn 10 mins; Lt. Hordern (twice) 30 mins and 15 mins; Lt. Small 20 mins; Lt. Picton-Warlow 25 mins; Lt. Todd 25 mins; Maj. Fulton with Lt. Maude 15 mins; Lt. Maude 8 mins, first circuit alone; Sergt. Jarvis 10 mins. On Avro 448, Lt. Fuller 25 and 30 mins; Lt. Small

25 mins; Lt. Picton-Warlow 30 mins; Lt. Corballis 20 mins; Maj. Hilton with A.M. Clarke 6 mins, with A.M. Smith 6 mins, with A.M. Lowe 6 mins, with A.M. Gilbert 6 mins.

On M. Farman 403, Lt. Sitwell 12 and 20 mins; Lt. Noel 17 mins; Lt. Pretyman 15 mins; Lt. Bourke 18 mins; Lt. Cutler 7 and 24 mins; Lt. Gaskell 13 mins; Lt. Shepherd with Lt. Cutler 5 mins. On M. Farman 411, Lt. Shepherd with E.R.A. Case 5, 25 and 45 mins, with Sergt. Coleman 14 mins; Lt. King 7 mins; Lt. Wilson 15 mins; Lt. Gaskell 15 mins; Lt. Gill 40 mins; Lt. Wanklyn with A.M. Savill 54 mins, with A.M. Turner 42 mins. On M. Farman 427, Lt. Shepherd 5 and 16 mins; Lt. Noel 5 and 10 mins; Lt. King 10 mins; Lt. Cutler 5 mins. On M. Farman 426, Lt. Stopford with Ldg-Smn Clemens 25 mins, with Sergt. Porter 45 mins, with A.M. Gallie 10 mins, Cpt. Salmond 5 mins. On M. Farman 431, A.M. Higginbottom 15 mins, Maj. Trenchard 15 mins; Lt. Longmore 5 mins; Asst-Paymr. Lidderdale 32 mins, Lt. Randall 50 mins.

On B.E. 417, Cpt. Salmond 4 mins alone, with A.M. Copper 40 mins, with Sergt. Rigby 25 mins, Lt. Edmunds 21 mins; Lt. Birch (4 flights) 76 mins; Cpt. Hoare (twice) 20 mins; Lt. Rodwell (3 flights) 69 mins. On B.E. 442, Cpt. Salmond with Lt. Fowler 25 mins, with Lt. Harvey-Kelly 28 mins, with Lt. Edmunds 17 mins, with Cpt. Hoare (twice) 47 mins, with Lt. Reilly 5 mins, and 5 and 10 mins alone, Lt. Edmunds 14 mins. On B.E. 449 Lt. Fowler 24, 25, and 27 mins, Lt. Newall 20, 22, and 25 mins, Lt. Edmunds 15 and 20 mins

On Short 402, Lt. Kershaw (3 flights) 85 mins; Lt. Vaughan (twice) 32 mins, Maj. Gerrard with Lt. Hathorne (4 flights) 47 mins, with A.M. Sharpe 10 mins; Lt. Adams 40 mins, Lt. Hathorne 45 mins, Lt. Stopford with Sergt.-Maj. Levick 60 mins. On H. Farman 445, Maj. Gerrard with Lt. Mills 15 mins, with Lt. Hamilton 20 mins, Lt. Longmore 25 mins, Lt. Stopford 15 mins.

Hendon.—At Grahame-White School, 4.35 a.m., Lt. Evill circuits with Instr., then circuits alone. Lt. Eales straights, with instr. Sir A. Sinclair circuits.

At Bleriot School, Cpt. Cox, Lt. Low and Messrs. Williams and Gower rolling.

At W. H. Ewen School, 4.30 a.m., on 35-h.p. Caudron No. 1 M. Baumann with Messrs. Cowling and Clark, Cpt. Jennings and Lt. Bewes. Later M. Baumann on 35-h.p. Caudron to 3,000 ft. During morning Mr. Sydney Pickles delivered 40-45 Caudron to Farnborough from Hendon, later putting machine through all tests. M. P. Marty also delivered an 80-h.p. Caudron hydro to Isle of Grain flying from Crotoy. During afternoon Messrs. E. Baumann and F. W. Goodden exhibition flights on 35-h.p. Caudrons Nos. 1 and 2.

At Temple School, Mr. Temple exhibition flights.

Brooklands.—At Bristol School, Mr. Merriam test, then with Mr. R. Powell, Lt. Newton (new pupil) and Mr. Skene.

Mr. Merriam alone then with Lieut. Newton. Mr. Skene straights. Mr. Benda11 also with these pupils. Mr. Skene alone first time two circuits and two excellent 8s at 200 ft.

Mr. Harris straights and circuits, Mr. Bendall with Cpt. Shott and Mr. Newton. Mr. Merriam with Cpt. Shott and Mr. Powell for straights and circuits. Mr. Skene alone.

At Vickers School, in afternoon Messrs. Knight, Orr Paterson and Mitchell straights on No. 2 mono. Messrs. Barnwell and Knight on biplane with Mr. Elsdon. Mr. Knight on biplane with Lt. Smith (new pupil). Mr. Beevor on biplane.

Salisbury Plain (Bristol School).—Mr. Busteed trial on Roumanian "sociable" mono. Mr. Pixton testing; Mr. Pizey with Capt. Popovici on mono, reception tests for Roumanian War Office successfully passed. Maj. Hewetson taxi-ing on single mono; Mr. Pixton on biplane with Lt. Osmond, R.N., and Lt. Miley, R.N. Mr. Pizey with Cpt. Popovici on Roumanian mono 1,000 ft. test witnessed by Prince Cantacuzene for Roumanian War Office. Prince Cantacuzene on same machine with Cpt. Popovici, Cpt. Barnaby with Mr Pizey, Mr. Pixton with A.M. Pratt. Mr. Pizey with Lt. Beroniade and Lt. Osmond, R.N., Mr. Pixton with Lt. Miley, R.N., Cpt. Barnaby and Lt. Osmond, R.N., 3 flights each; A.M. Pratt and Cpt. Popovici one each, Sous-Lt. A. Pascanu taxi-ing on single mono. Mr. Delaplane for second half ticket passed successfully. Mr. Pixton on 80 h.p. mono, Cpt. Popovici and Mr. Delaplane straights on Anzani mono.

Brighton-Shoreham.—At Avro School, in morning Mr. Geere straights on Avro (Green). Avro (E.N.V.) has, after delay, got new crankshaft. Mr. Shaw straights. Avro waterplane out between bridges. Engine trouble through slack throttle wires.

Mr. Pashley on Blondeau-Hewlett testing.

Hornsea.—Mr. Stanley Adams exhibitions and passenger carrying with "Water Hen" on Hornsea Mere.

Liverpool (Waterloo).—Mr. Melly on Blériot two-seater.

Boston, Lincs.—Mr. B. C. Hucks further exhibition before enthusiastic crowd. Flew across country to Louth.

FRIDAY, June 13th.

R.F.C., Central Flying School.—Misty early, moderate west wind. Dull. On Avro 430, Cpt. Webb Bowen 8 mins; A.M. Higginbottom with M.M. T. O'Connor 10 mins; Lt. Small 15 mins; Lt. Brodribb 35 mins; Lt. Reilly 20 mins; Maj. Fulton with Lt. Wilson 60 mins. On Avro 432, Lt. Reilly 15 mins; Lt. Morgan 15 mins; Lt. Fuller 30 mins over Tidworth, etc.; Lt. Small 30 mins over Lark Hill, Bulford, etc.; Sergt. Jarvis 15 mins; A.M. Higginbottom with A.M. Baldock 45 mins; Lt. Wanklyn with A.B. Townsend 31 mins. On Avro 433, Maj. Fulton 5 mins; Lt. Todd 15 and 30 mins; Lt. Hordern 20 and 30 mins; Lt. Brodribb 20 mins; Lt. Maude 25 mins; Cpt. Webb Bowen 15 mins; A.M. Higginbottom with A.M. Baldock 45 mins. On Avro 448, Lt. Picton-Warlow 15 and 25 mins; Lt. Corballis 20 and 25 mins; Lt. Fuller 15 mins; Lt. Morgan 35 mins over Amesbury, Ludgershall, etc.; Maj. Fulton 10 mins.

On M. Farman 411, Lt. Wanklyn 11 mins; Lt. King 8 mins; Lt. Cutler 14 mins; Lt. Wanklyn with A.M. Turner 10 and 40 mins, with A.M. Savill 25 mins; A.M. Savill 5 mins alone, with Lt. Wanklyn 10 mins. On M. Farman 418, Lt. Shepherd 8 mins alone, with E.R.A. Case 10 and 16 mins, with A.M. Turner 10 mins, with P.O. Tigrphist Hogan 57 mins, with Tigrphist Stirling 48 mins, with Sergt Coleman 15 mins. On M. Farman 427, Lt. Gaskell 15 and 24 mins; Lt. Noel 17 mins; Lt. Wilson 13 mins; Lt. Pretyman 13 mins; Lt. Bourke 14 mins; Lt. Gill 24 mins; Lt. Sitwell 25 mins; Lt. King 20 mins. On M. Farman 426, Capt. Fawcett (3 flights) 50 mins; Lt. Stopford 5 mins alone, with Sergt Porter 60 mins; Lt. Harvey Kelly 10 and 23 mins. On M. Farman 431, Engr. Lt. Randall 5 mins.

On B.E. 417, Capt. Salmond 8 mins alone, with P.O. Grady 30 mins, with Sergt. Rigby 25 mins. On B.E. 442, Cpt. Hoare (3 flights) 61 mins; Lt. Fowler 21 mins; Cpt. Salmond with Lt. Rodwell 40 mins. On B.E. 449, Lt. Edmunds (3 flights) 68 mins; Lt. Fowler 13 mins; Lt. Newall 17 mins.

On Short 402, Lt. Vaughan (twice) 35 mins; Lt. Kershaw (twice) 25 mins; Lt. Adams 12 mins; Maj. Gerrard with Lt. Hathorne 10 mins; Lt. Hathorne 15 and 20 mins; Lt. Stopford with Sergt. Waddington 55 mins. On H. Farman 412, Maj. Gerrard with Sergt Vagg 13 mins. On H. Farman 445, Lt. Stopford 10 mins alone, with Lt. Mills 35 mins, with Sergt. McElwee 10 mins.

Hendon.—At Grahame-White School, 4.45 a.m., Lt. Evill circuits and 8's on No. 109. Lt. Eales straights with instr., Sir A. Sinclair circuits. Mr. R. H. Carr on No. 109 8's. Lt. Evill took brevet in excellent style. Lt. Moore and Mr. J. E. North straights with instr., W. Russell, and Lt. Boddam-Whetham straights. Mr. W. Birchenough circuits and 8's, later took brevet; Instr. Hamel on Blériot.

At Depperdussin School, Col. Smyth and Lt. Brock straights on No. 3, Mr. Murray on No. 2 broke patten in rough ground. Mr. Hervey-Bathurst joined school. In evening Mr. Spratt took up No. 5 machine (35 h.p.) to 1,400 ft.

At Bleriot School, Capt. Cox, Lt. Low and Messrs. Williams and Gower rolling. Cpt. Cox and Mr. Williams short flights. Mr. Pixley circuit on No. 4. In afternoon Mr. Hamel and Miss Trehawke Davies to Eastchurch in 70 Blériot.

At W. H. Ewen School, 4.20 a.m., on 35-h.p. Caudron No. 1 M. Baumann with Lt. Bewes and Mr. Prosser. On 35-h.p. Caudron No. 2, pilot F. W. Goodden with Messrs. Dalrymple-Clark, Cowling and Capt. Jennings. School again out 3.40 p.m. Mr. L. Russell straights on 35-h.p. Caudron.

At Temple School, 3.45 a.m., Mr. Temple 15 mins. Messrs. Ritchie, Penny, Valle, Lance, 10 mins each straights. Mr. D. Ritchie circuits.

Brooklands.—AT BRISTOL SCHOOL, Mr. Bendall test, Mr. Skene 8's, Mr. Bendall with Cpt. Shott and Lt. Newton. After breakfast Mr. Merriam test with mechanic. In afternoon Mr. Bendall test, Mr. Skene alone, Mr. Bendall with Mr. Powell, then pupil alone.

AT VICKERS SCHOOL, in morning Messrs. Knight and Beevor on biplane, Major Brancker alone, Messrs. Barnwell, Mitchell and Orr Paterson on No. 2 mono. In afternoon Pilot Knight test on biplane. Mr. Beevor took brevet in excellent style, rising to 1,000 ft. in first set of 8's and 1,100 ft. in second set, each time landing very near mark. Pilot Knight on biplane with Mr. Elsdon and Lt. Smith. Messrs. Knight, Orr Paterson and Mitchell on No. 2 mono.

Mr. Gordon Bell with Lt. Kennedy, R.N., on Martin-Handasyde sideslipped, smashed machine and killed passenger.

Salisbury Plain (BRISTOL SCHOOL).—Mr. Pizey on biplane with Lt. Osmond, R.N., but too bumpy for tuition. Better after breakfast, Mr. Pizey with Mr. Gipps; latter for brevet, successfully passed. Mr. Adams also passed, flying well at good height. In afternoon Lt. Burns also passed successfully. Mr. Pizey busy on biplane with Cpt. Barnaby, and Lt. Miley, R.N., twice each. A.M. Pratt, Lt. Beroniade, Lt. Osmond, R.N., and Sous-Lt. Pascanu once each. M. Jullerot on biplane, later on "sociable" mono, and afterwards with Sous-Lt. Pascanu on biplane. On mono M. Jullerot with Mr. Delaplane and Lt. Beroniade, Mr. Busteed on 80 h.p. mono to Upavon and back at 1,000 ft. On single mono Lt. Pascanu, Mr. Delaplane, Lt. Beroniade, and Cpt. Popovici straights. Mr. Pixton on biplane with Lt. Osmond, R.N., Cpt. Barnaby, and A. Pratt once each. Mr. Pizey with Cpt. Popovici, Maj. Hewetson, and Mr. Garnett in turn on "sociable" mono, Mr. Busteed finished with tuition to Maj. Hewetson, and Mr. Garnett on same.

Brighton-Shoreham.—AT AVRO SCHOOL, Mr. Raynham on waterplane, flying under bridge. Mr. Geere on Avro (Green), Messrs. Shaw and Gaskell straights. Wreck of Maurice Farman, which ran into Hangleton Church, arrived. Both officers unhurt, but machine badly smashed.

Louth, Lincs.—Mr. B. C. Hucks (70-h.p. Blériot) splendid exhibitions of fancy flying.

SATURDAY, June 14th.

R.F.C., Central Flying School.—Dull and misty and slight rain. Moderate East wind. On H. Farman 445, Maj. Gerrard with passenger 15 mins.

Hendon.—AT DEPERDUSSIN SCHOOL, Lt. Porte and Cpt. Massy in cross-country race on 100-h.p. Mr. Hucks on 35-h.p. No. 5 in cross-country and speed handicap, winning latter race. Later exhibition flight on No. 5. Mr. Barron on same, also Mr. Spratt to 1,800 ft.

AT BLERIOT SCHOOL, 6.10 a.m., Mr. Corbett Wilson with Mechanic Pothet arrived from Hardelot, having done journey in 1 hr 20 mins on his 80-h.p. tandem.

AT W. H. EWEN SCHOOL, too windy for pupils. Mr. Sydney Pickles on new 45-h.p. Caudron and M. Baumann on 35-h.p. Caudron, both excellent exhibition work.

AT TEMPLE SCHOOL, Mr. Temple short exhibitions.

Exhibitions specially reported.

Brooklands.—AT BRISTOL SCHOOL, Mr. Merriam test, then with Mr. Howard. Lt. Noott and Mr. Skene circuits in choppy wind. Wind stopped school work. Mr. Merriam with Mr. Hiscox (prospective pupil).

AT VICKERS SCHOOL, Messrs. Barnwell and Mitchell on No. 2 mono. Messrs. Knight and Barnwell on No. 19 biplane. Cpt. Wood on No. 2 mono. In afternoon Mr. Barnwell on biplane with passenger.

Brighton-Shoreham.—AT AVRO SCHOOL, Mr. Geere and Mr. Shaw on Avro. In evening Messrs. Geere, Gaskell and Shaw out.

At dawn Mr. Pashley over Bungalow town. At lunch time left for Bognor on Blondeau-Hewlett with passenger for exhibitions; returned in half an hour in evening.

The Avro waterplane (100-h.p. Gnome) was taken out by Raynham between bridges three hours after high tide. After circuits returned and took Lt. Seddon, R.N., to Brighton. With the passenger machine climbed 1,300 ft in 5 mins. Off Brighton, "Capt. X," representing purchasers, took passenger-seat and machine was put through hour's trial, and proved very handy on water, rising after short run. It is being packed for dispatch abroad.

Windermere (LAKES FLYING CO).—Mr. Trotter on Mr. Gnossplius's hydro-monoplane.

Liverpool (Waterloo).—Mr. Melly on Blériot two-seater in tricky wind flew north to Altcar Rifle Range, circled and returned to Waterloo, landing in spiral from 750 ft with engine stopped.

Mansfield.—5 p.m., Mr. Whitehouse 15 mins. test on Handley Page mono; 400 ft in gusty wind. 6 p.m. exhibition flight; 7.30 half an hour switchbacking; crowd both inside and outside ground very enthusiastic; 9 p.m., nearly dark, Mr. Whitehouse bomb-dropping; then round Mansfield at about 2,000 ft; guided back to ground by rockets and flares.

Louth, Lincs.—Mr. B. C. Hucks (70-h.p. Blériot) terminated exhibition flight amid great enthusiasm.

SUNDAY, June 15th.

Hendon.—AT W. H. EWEN SCHOOL, 4.20 a.m., on 35-h.p. Caudron No. 1 M. Baumann with Lt. Bewes and Mr. Prosser. On 35-h.p. Caudron No. 2, F. W. Goodden with Messrs. Jagenberg, Dalrymple-Clark and Capt. Jennings. Mr. A. L. Russell straights.

Exhibitions specially reported.

AT TEMPLE SCHOOL, Mr. Temple exhibitions on Caudron.

Brooklands.—AT VICKERS SCHOOL, in evening Mr. Barnwell on No. 19 biplane with Mr. Webb (new pupil).

AT SOPWITH'S, Mr. Hawker with 80-h.p. Gnome on Sopwith biplane beat British height record for pilot and two passengers made by Major Gerrard on "B.E." with 140-h.p. Gnome.

Exhibitions by Mr. Hamel on Blériot.

Mansfield.—Mr. Whitehouse on Handley Page mono; numerous flights. Flights on Sabbath arranged by "The Scientific and Instructive Aviation Co., Ltd."

A New Horse Test.

At the Yorkshire Horse Show one hears the unfortunate animals are to be passed through a new and highly modern test, concerning their behaviour in the presence of an aeroplane "en marche." Precisely how the test is to be applied does not appear—in fact, one gives the information with all due reserve.

Concerning Integral Propellers.

The Integral Propeller Works of Frankfort, who make German Chauvière propellers, write :—

"It has come to our knowledge that a foreign firm of propeller manufacturers, through one of their representatives, circulates the statement that the German Integral Propeller Works (the sole licencees of the Chauvière patent) were either about to close down or had been practically swept off the market owing to the great success of the propellers made by the firm alluded to above.

"We wish to point out to your readers that the Integral Propeller Works is more than holding its own, and is overwhelmed with orders so much so that the output has increased approximately 100 per cent. during the last twelve months. Incidentally, we may mention that at the Prince Henry Reliability Trials last month, 13 machines out of the 19 taking part used Integral propellers and all the prize-winning machines used our propellers."



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THE PROPRIETOR of the Patent No. 6527 of 1911 for "Improvements in Airships" is desirous of entering into arrangements by way of licence and otherwise, on reasonable terms, for the purpose of exploiting the same, and ensuring its full development and practical working in this country.—All communications to HASELTINE, LAKE, AND CO., Chartered Patent Agents and Consulting Engineers, 28, Southampton Buildings, Chancery Lane, London, W.C.

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IMPORTANT EVENTS AT HENDON.

THE FIRST

Aerial Fete and Battle of Flowers.

WEDNESDAY, JUNE 25th, 1913.

For the Enlargement Fund of the Institute Francais de Londres & the French Charities in London.

ON June 25th, 1913, the day of President Poincare's visit to the Institute, a procession of decorated motor cars will arrive at Hendon from noon to 12.30 p.m. From 12.30 p.m. to 1 p.m. the Decorated Aeroplanes and Motors will be judged. There will be prizes for the best decorated monoplane and the best decorated biplane.

From 1 p.m., weather permitting, an Aerial Display will commence. This will include a Grand Speed Handicap and an International Team Race. This will be followed by the judges' award for the best decorated cars and aeroplanes, and the entire proceedings terminate in a Parade of the Cars—headed by the prize-winners—in front of the various enclosures, and a Battle of Flowers.

This is the first occasion on which aeroplanes have been employed in connection with a Battle of Flowers, and such a unique and beautiful spectacle should certainly not be missed.

The Paddock Enclosure—Admission Ten Shillings. Motor Cars, Ten Shillings (including chauffeur in uniform and Ten Shillings each extra occupant). The Special Enclosure — Admission Five Shillings. Motor Cars, Five Shillings. In the 2s. 6d. and 1s. Enclosures no motor cars will be admitted.

Grand Illuminated NIGHT FLYING

Demonstration and Firework Display,

THURSDAY, JUNE 26th, 1913

IN consequence of the success of the last two Night Flying Demonstrations at the London Aerodrome, it has been decided to give another display on Thursday, June 26th. This will commence at 8.30 p.m., weather permitting. During the evening a Battleship will be bombarded by aeroplanes. Full particulars next week.

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MIDSUMMER MEETING,

NEXT SATURDAY, JUNE 21st, 1913

THE programme will include a Grand Speed Handicap and a Cross-Country Race over the new Mill Hill course. These latter races always provide a really beautiful spectacle, during the greater part of the course the machines appearing to be suspended motionless in the air. Exhibitions of clever flying will also be given.

ASCOT SUNDAY,

JUNE 22nd, 1913.

RECENT Sunday Exhibitions at Hendon have attracted brilliant gatherings, but on this occasion there should be a record attendance. Competitors at the Horse Show will be present, as well as the leading Jockeys and Trainers from Ascot.

Special exhibitions of flying will be given by the famous Hendon Aviators, and there will be passenger-carrying flights throughout the afternoon.

Admission: 6d., 1s., 2s. 6d., motors 2s. 6d.

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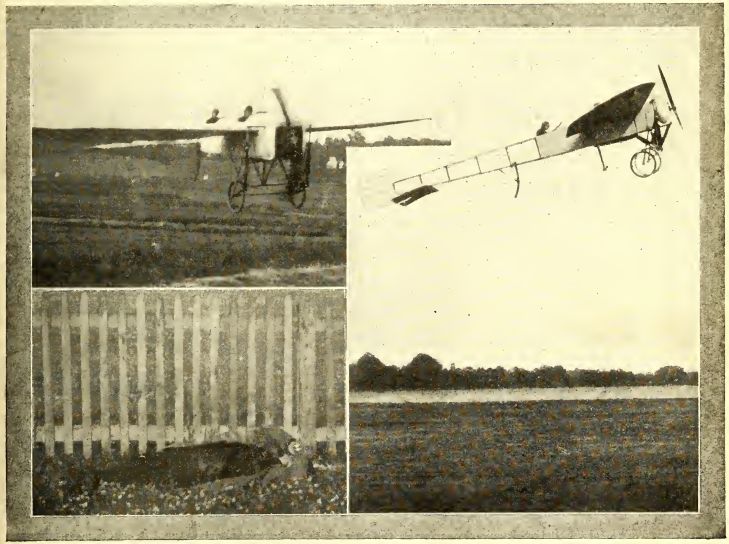
THE AEROPLANE

1d WEEKLY

Edited by C. G. GREY. ("Aero Amateur")

VOL. IV. [Registered at the G.P.O. as a Newspaper.] THURSDAY, JUNE 26, 1913. No. 26.

THE NEW MOUNT.



Mr. Hamel flying his new Blériot (80-h.p. Gnome) at Brooklands on Sunday last. Above, Mr. Hamel is seen landing over the corner of the Sewage Farm, with Lady Victoria Pery as passenger, after reaching 6,500 feet. On the right he is seen ascending abruptly. Below, one of his admirers is seen in an attitude which seems the most sensible for watching a high flight.

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Editorial and Advertising Office—166, Piccadilly. Telephone—5407 Mayfair. Telegrams—Aileron, London.

Whom Shall We Believe?

The following questions were asked in the House of Commons on June 17th and were answered as shown:—

Captain FABER (Hampshire, W.), asked the Secretary of State for War if he would state whether the responsibility for allowing the aeroplanes that lately led to the deaths of Lieutenants Harrison and Arthur being allowed to fly in their deteriorated condition rested upon the officer commanding the Flying Wing.

Colonel SEELY (Derby, Ilkeston).—I cannot admit that these aeroplanes were in a deteriorated condition as stated in the question. As regards the first accident, the Cody aeroplane had recently been thoroughly overhauled and returned as being in a safe condition for flying. As regards the second accident, the investigation of the question as to who was responsible for the condition of the wing tip which broke has not yet been completed.

Replying to a question from Earl Winterton (Sussex, Horsham),

Colonel SEELY said most careful reports were furnished when an accident took place and he deprecated any suggestion that the officers did not do their work well. From all the information he had it appeared they were doing their work admirably and the aeroplanes were in excellent condition.

Captain FABER asked did not officers of the Flying Corps hold a very different view, and did not some of them hold the opinion that the two officers mentioned were murdered by carelessness.

Colonel SEELY.—I think that is a most improper question. I know that the statement made is absolutely devoid of foundation.

The following extracts are from reports issued by the Accidents Investigation Committee of the Royal Aero Club, a body upon whom, one gathers, Colonel Seely places some reliance.

From the report composed on May 19th on Mr. Rogers-Harrison's death:—

Opinion.—The Committee is of opinion that the aircraft had structurally deteriorated from one cause or another since it was originally built in 1911, and that its condition at the time of the flight was precarious.

Recommendation.—In view of the fact that aircraft are built of perishable materials, the Committee strongly recommends that those which have been in existence for some time, whether they have been in use or not, should undergo a critical examination both as regards their framework and the fabric, with a view to ascertaining to what extent deterioration has taken place, and the condition of the aircraft generally recorded at the time.

From the report composed on June 10th on Mr. Desmond Arthur's death:—

Opinion.—The Committee is of opinion that the primary cause of the accident was the failure of the faulty joint in the repair to the rear main spar. The Committee is further of opinion that the repair referred to above was so badly done that it could not possibly be regarded as the work of a conscientious and competent workman.

Recommendation.—This accident points to the necessity for expert superintendence of every repair, however slight, of the structure, and independent inspection of such repair when completed, full details being recorded in the history sheet of the aircraft. After any important repair to the structure has been made, it should be so marked that both the workman by whom it was done, and the examiner who subsequently passed it fit for service, can be identified.

COMMENT IS UNNECESSARY.

Colonel Seely and the Grahame-White Deal.

The questions raised by Mr. Ledeboer in the "Daily Telegraph," by Mr. Turner in the "Observer," and by Sir Henry Dalziel and Captain Faber in the House of Commons concerning the purchase by the War Office of the fleet of assorted aeroplanes belonging to the Grahame-White Aviation Co., Ltd., seem to have raised suspicions that it was not a "square deal," such as one has a right to expect from a Government department, especially where the Minister responsible for that department has himself taken a direct hand in the transaction, as I have reason to believe was the case in this instance. It is therefore the more necessary to point out that in this case there is no question of crooked dealing, or even of the venial sin of what one may call "Marconism," which the House of Commons has officially sealed with its august approval.

Apparently, the deal in aeroplanes was simply an ordinary, if expensive, piece of political "window-dressing." So far as Mr. Grahame-White is concerned, as managing director of his firm he had certain goods to sell at the best possible price; he would have failed in his duty to his financial backers if he had not pulled off the deal when the opportunity offered. He had something to sell to the Government, and he sold it, exactly as a shipbuilding or armament firm sells their goods for cash, or as the Labour Party, the Irish Party, or any other party sells its votes for political considerations. If some of the machines were sent to Farnborough "on approval," that is merely a common practice in commerce, and it was no business of his whether those ultimately rejected were counted by Colonel Seely among his "101 available aeroplanes" for purposes of the Army Estimates. And really it is nobody's business in particular whether the parties to a deal happen to be on sufficiently friendly personal terms to fix up the affair over a glass of port after dinner, or whether they do it through the multifarious ramifications of a Government department.

And, be it noted, Mr. Grahame-White is always a sportsman, as is shown by the fact that he put two of the Farmans and the little 50-h.p. Grahame-White biplane through the Royal Aircraft Factory's tests

himself, showing that he had absolute faith in the quality of what he was selling, even in the second-hand Henry Farman bought from the executors of a deceased Greek officer—a machine which had been, unknown to him, standing unused so long that, when it ultimately broke in a slight accident in Government service, the spars were found to be simply boxes full of dust from dry-rot—a fact which was no one's fault and everyone's misfortune—though one cannot help thinking that, if more R.F.C. fatalities are to be avoided, more curiosity should be displayed as to the pedigree of machines purchased second or third hand.

When one comes to the War Office side of the deal, however, things wear a very different aspect. The purchase of second-hand machines while makers whose workmanship is of undoubted reliability were on the verge of bankruptcy for lack of orders carries its own condemnation. Even if the Chosen People of the Royal Aircraft Factory did not approve of the designs of those firms, orders for machines of other designs could have been given to them months before, so that their skilled workmen would not have left the trade.

But the crowning act was the purchase of Mr. Grahame-White's old Nieuport, a machine which had suffered in various minor accidents here and in America, had been sold to Mr. Barlow, had lain idle for months, had been bought back again, and was then rushed off to Farnborough to be counted in Colonel Seely's precious 101. Machines of the same make were rotting in the Royal Aircraft Factory—as I showed in a photograph at the time. Some of them were even newer than Mr. Grahame-White's Nieuport. All monoplanes were condemned as unsafe. These same machines to-day—nine months after the ban was put on them—are still unflown. Yet Colonel Seely, apparently by private arrangement, sanctions the expenditure of something in the region of £1,000 of public money on a machine which was then useless and unsafe for anyone to fly, and was only accepted a week or two ago after having been practically rebuilt. No one, I least of all, grudges Mr. Grahame-White the price of the machine. He simply made a good bargain for his firm, as it was his duty to do. But one cannot hold the same view of a Minister who spends public money in such a way, whether it is to save his own face or that of his department. And, above all, we had Colonel Seely's own admission only a fortnight ago that he had counted these machines among the number with which he and the servile Press of his party made such a parade of air-power. A more flagrant instance of "window-dressing" would be hard to find.

There is no suspicion of financial corruption in the deal, but I think anyone with any sense of what is straight and what is not will agree that the transaction baptises Colonel Seely with the outward and visible sign of an inward and spiritual disgrace which most of us would not care to bear, and, unfortunately, the stigmata have also to be borne by certain distinguished officers who have been compelled, in loyalty to their department, to be parties to a deal which does not march well with a soldier's honour.

The situation is well fitted by a priceless phrase produced recently in a leading article of the "Morning Post," where, in summing up the Marconi affair, the writer says:—"It seems to us that, even if this transaction had no corrupt purpose either upon the one side or the other, it is exactly what corrupt persons do when they enter into a corrupt transaction, and therefore should be condemned as a precedent which might cover corruption."

No one gave more credit to Colonel Seely in his early efforts than have those writers in the Press who have had the greatest practical experience of aviation. Mr. Turner, a trained aviator; Mr. Ledeboer, a man of sound scientific education; Mr. Whittaker, also a flier, one of the best judges of a motor among my acquaintances, and incidentally a person of some military knowledge; and I, who can at least claim to be a practical engineer—may at least be admitted to know fairly well what we are about when writing on the subject of aeroplanes, despite Colonel Seely's cheap gibe in his recent speech about writers in the Press.

The unfortunate Minister's trouble seems to be that he now covets unqualified praise for his failure to accomplish the task he set himself. To this end he has juggled with figures, he has allowed Army pilots to fly machines which any of the critics whom he affects to despise could have told him were dangerous, he has made our aerial defence force a laughing-stock, and he has ruined his own reputation. In the words of Chaucer's lament:—

"Truth is put down, reason is holden fable;
Virtue hath now no dominaciouu,
Pitee exyled, no man is merciable.
Through covetyse is blent discretiouu
The world hath made a permutacioun
Fro right to wrong, fro trouthe to ficklenesse,
That al is loste, for lacke of steadfastnesse."

—C. G. G.

The Royal Aero Club.

At the committee meeting on the 17th inst. the following aviators' certificates were granted:—No. 500, May 29th, 1913, Assistant-Paymaster Charles Robert Finch Noyes, R.N. (Bristol biplane, Naval School, Eastchurch); 501, May 30th, 1913, Lieut. H. D. Harvey-Kelly (Royal Irish Regt.) (Maurice Farman biplane, Central Flying School, Upavon); 502, June 2nd, 1913, George Thomas Harvey Pack (shipwright, naval) (Short biplane, Central Flying School, Upavon); 503, June 2nd, 1913, Lieut. Arthur Bruce Laskell, R.N. (Maurice Farman biplane, Central Flying School, Upavon); 504, June 2nd, 1913, Reginald Hugh Carr (Grahame-White biplane, Grahame-White School, Hendon); 505, June 3rd, 1913, Lieut. William George Sitwell, R.N. (Maurice Farman biplane, Central Flying School, Upavon); 506, June 3rd, 1913, Frank Wildenham Goodden (Caudron biplane, Ewen School, Hendon); 507, June 3rd, 1913, Frank Hudson (Deperdussin monoplane, Deperdussin School, Hendon); 508, June 3rd, 1913, Capt. George Marshall Griffith, R.G.A. (Bristol biplane, Bristol School, Salisbury Plain); 509, June 3rd, 1913. Capt. Henry Fawcett, R.M.L.I. (Maurice Farman biplane, Central Flying School, Upavon); 510, June 3rd, 1913, Eric Bentley Bauman (Deperdussin monoplane, Deperdussin School, Hendon); 511, June 12th, 1913, Joseph Raymond DelaPlane (Bristol biplane, Bristol School, Salisbury Plain) (subject to permission of the Aero Club de France); 512, June 13th, 1913, Sub-Lieut. Douglas Claude Strathearn Evill, R.N. (Grahame-White biplane, Grahame-White School, Hendon); 513, June 13th, 1913, George Lancelot Gipps (Bristol biplane, Bristol School, Salisbury Plain); 514, June 13th, 1913, Francis Percy Adams (Bristol biplane, Bristol School, Salisbury Plain); 515, June 13th, 1913, William Birchenough (Grahame-White biplane, Grahame-White School, Hendon); 516, June 13th, 1913, Lieut. Ronald Burns (Australian Commonwealth Military Forces) (Bristol biplane, Bristol School, Salisbury Plain); 517, June 13th, 1913, and Lieut. Charles Francis Beevor (18th (Q.M.O.) Hussars) (Vickers biplane, Vickers School, Brooklands); 518, June 14th, 1913, Lieut. Edward Overend Priestley, R.N. (Bristol biplane, Bristol School, Salisbury Plain).

The aeronaut's certificate was granted to: 31, L. H. Mander.

"Daily Mail" Cross-Atlantic Prize, £10,000.—Correspondence with the proprietors of the "Daily Mail" was considered, and the rules submitted by the Competitions Committee were approved with certain additions dealing with the course and the aircraft. These rules will be published in the next issue.



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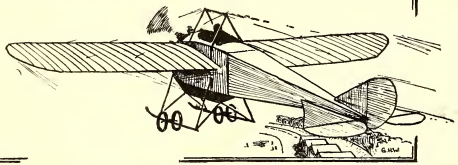
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—to fast Monoplanes

The Reserve of the Royal Flying Corps.

BY W. E. de B. WHITTAKER.

To the optimist this world must be one long series of disappointments. He lives in a continued state of unrealised hope. All will be well in the end, he says, but the end never appears to come. Those of more balanced or perhaps wearier brains than his own regard him sadly as an amiable imbecile. When that incurable optimist is a Minister of State, and his department is that of War, the individual disease becomes almost a national tragedy.

A year ago, or perhaps a little earlier, the Secretary of State for War was told that aircraft were nowadays an essential element in scientifically managed war. England had none, and some must be provided. Equal in importance with the aircraft were the pilots, a class of which the army was also short. The sleepers of Whitehall awakened momentarily from their slumber of the ages, and a scheme was drawn up. The Incurable Optimist himself met a body of those most interested in aviation, and listened with a total lack of comprehension to a series of disjointed and irrelevant speeches. In reply, he assured his listeners with all that honeyed sweetness of fulsome periods for which he is so well distrusted, that his intention was to link all the heroes of the Navy, Army, and civil life into one glorious band of Guardians of the National Safety. The aviators of the Royal Flying Corps, whether sailor, soldier, or civilian, were to work together in harmony for little financial benefit but much honour. All would rush to enrol their names on so glorious a roster. And the day of "The Islanders," as sung by Mr. Kipling, would disappear into the dim recesses of history.

The response has not been that expected by Colonel Seely. Soldiers and sailors, it is true, have applied in dozens for a service which has peculiar attractions to those in the King's Service. Not only is it in some degree a matter of sport, but it is also a high road to promotion. The first line can easily be filled so long as the present establishment is maintained. It is the Reserve which requires attention.

In a science or an art of which there are so few exponents all are of some importance. It is not only the expert who deserves attention. In aeronautics the casualty rate is so high that a strong and effective reserve is necessary. As special circumstances rule the case there should be special inducements also. In a country which does not know any species of compulsory service only a very low percentage of the population become soldiers or sailors. The percentage varies little in any arm of either Service. It may be slightly higher under normal conditions in the Royal Flying Corps, but with existing attractions it is not likely to be high enough. Some special effort must be made in order that the civilian aviator will be at the disposal of the country, and will have sufficient training to be of use.

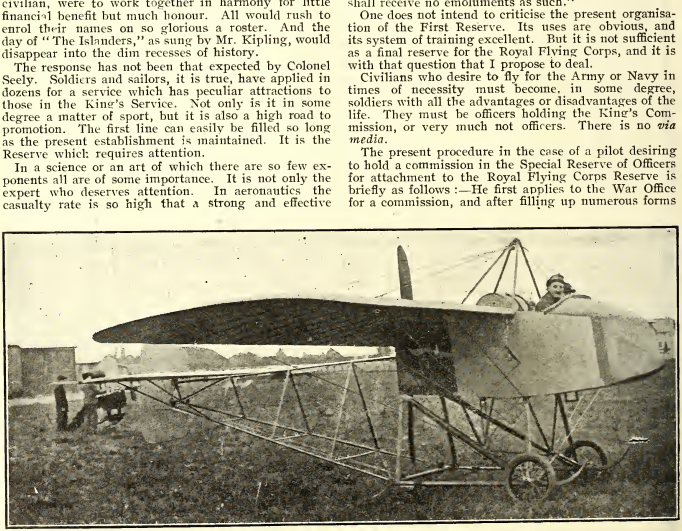
Paragraph 8 of the Royal Warrants dealing with the pay and allowances of the Royal Flying Corps (Military Wing), issued April 23rd, 1912, gives some rough idea of the conditions of service of civilians who join the Reserve. "Officers appointed to the Special Reserve of Officers for service in the Royal Flying Corps who are serving in the First Reserve shall, in consideration of their holding themselves liable for service with the Army and Navy at home and abroad, and of the performance of the quarterly test, receive, in place of the gratuity of £20 issued to other officers in the Special Reserve of Officers, an annual gratuity of £50, payable under conditions to be prescribed by the Army Council. . . ."

Paragraph 9 reads: "Officers of the Second Reserve shall receive no emoluments as such."

One does not intend to criticise the present organisation of the First Reserve. Its uses are obvious, and its system of training excellent. But it is not sufficient as a final reserve for the Royal Flying Corps, and it is with that question that I propose to deal.

Civilians who desire to fly for the Army or Navy in times of necessity must become, in some degree, soldiers with all the advantages or disadvantages of the life. They must be officers holding the King's Commission, or very much not officers. There is no *via media*.

The present procedure in the case of a pilot desiring to hold a commission in the Special Reserve of Officers for attachment to the Royal Flying Corps Reserve is briefly as follows:—He first applies to the War Office for a commission, and after filling up numerous forms



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is, if suitable, selected. He is then medically examined. If he passes the doctor with success he is then given a date on which he can begin a three months' course at the Central Flying School. Several weeks will be occupied by these preliminaries, during which time the candidate will be uncertain as to his future. If he goes to the Central Flying School he not only learns something new in the art of flying and its kindred sciences, but he acquires some inward knowledge of the life of a soldier. At the end of his time at the School he is, if successful, attached to an Aeroplane Squadron that he may learn the meaning and value of discipline, and many other things that go to make a soldier. Then after this preparation he is appointed for continuous service, or to the Reserve. The whole business from beginning to the end has then taken the best part of a year.

The fact of his being in the Reserve of the Royal Flying Corps can be regarded as a drawback quite as much as a blessing. There are few advantages in it to those pilots who have to earn their living by flying. Many employers do not care to engage aviators whose time is liable to be broken into by Service calls. Financially, it cannot compare with civil employment, and, contrary to the usual rule, there is only a limited period of service, and no pension. The lower rates of pay in Army and Navy when compared with civil life are supposed to be compensated by the security of a pension. The authorities regard it as possible that a man's nerve will give after four years' flying. If this is true, then the pilot is also ruined for civil life so far as flying is concerned, and he must acquire some new means of livelihood. His Reserve service has been of no advantage to him.

Again, though this is delicate ground, there are social considerations to be considered. There are many excellent pilots who, while not suitable for commissions as officers, would not desire to serve as N.C.O.'s and privates. Under the existing conditions in aeronautics the Government should not be deprived of the services of these men. In times of emergency, and it is for such times that all reserves exist, these pilots could render highly useful service. Their knowledge of military affairs need not be extensive. It is not necessary that they should be word perfect in the maxims of Clausewitz. The principles of strategy and tactics might remain to them an unsealed secret until in the fullness of time they begin their last sleep. Their duties would consist entirely of piloting highly-trained observers whereso ever they might wish to go.

(To be continued.)

Naval and Military Aeronautics.

GREAT BRITAIN.

Admiralty appointments, June 19th :—

Royal Naval Volunteer Reserve.—Acting Sub-Lieutenants—R. L. G. Marix and H. A. Littleton, both appointed sub-lieutenants, to date November 1st, 1912, and to the "Hermes," additional, for Naval Flying School as flying officers, to date May 17th; D. G. Young appointed sub-lieutenant, and to the "Hermes," temporary, for Naval Flying School, to date June 14th.

Captain Owen Mostyn Conran, King's Own (Royal Lancaster) Regiment, is at Buc learning to fly on a Maurice Farman biplane.

Sergt.-Majors Fletcher and Measures and Sergt. Mullin (No. 2 Squadron, Montrose) successfully passed their brevet tests, flying a Maurice Farman machine at St. Andrews on the 16th before Capts. Longcroft and Tucker, representing the Royal Aero Club. Later on the machine was damaged by the propeller catching the hawser of a wrecked vessel sticking out of the sands. It was repaired to fly back to Montrose, all the machines and equipment arriving back at the base on Wednesday, June 18th.

Captain Tucker had a nasty spill on a "B.E." machine on Friday, June 20th. He had been flying for some time and made a steep descent. The wheels and chassiswork of the machine got entangled in the long grass and it up-ended, smashing the propeller, crankshaft, and lower right wing. The fuselage was also considerably damaged. Capt. Tucker escaped unhurt.

Lieut. A. M. Read, of Squadron No. 2, lies in a critical state as the result of being thrown from a motor-cycle. Latest reports say that his condition is improving.

On June 18th and 19th No. 4 Squadron R.F.C. removed from Farnborough to the new sheds at Netheravon, half-way between Lark Hill and Upavon. Maurice Farmans Nos. 305, 306, 307, and 357, were flown over by Capt. Reynolds, Lt. Gould, and Lt. Holt, and B.E. 201 was flown over by Major Raleigh, O.C. No. 4 Squadron. During the training season the squadron will remain at Netheravon.

No. 5 Squadron has now been formed at Farnborough. The C.O. is Major J. F. A. Higgins, D.S.O., R.A.

FRANCE.

The Sous-officiers Didier and Verdier, of the Maubeuge escadrille, flew on June 13th to Bar-le-Duc on two-seated Deperdussin monoplanes, each with a mechanic as passenger. At that place they joined Lieutenant-aviators Rochette and Radisson, who reached Bar-le-Duc last week. The flight from Maubeuge to Bar-le-Duc, passing Reims on the way, is about 134 miles in length. These four pilots are carrying out a series of experimental reconnaissances in the district.

On June 14th, at Buc, Pierre Gougenheim passed four Henry Farman biplanes (80 h.p. Gnome) through their trials for the army. The inspecting officer was Captain Cammerman, who was one of the earliest of that brilliant series of pilots for which the French army is renowned.

Lieutenant-aviator Varcin, flying a Maurice Farman biplane (70-h.p. Renault), with Sapper Chepeau as passenger, left Buc at 3.30 a.m. on June 15th and reached Saint-André de Cubzac, near Bordeaux, at 11 a.m., having made no descent on the way. In seven and a half hours he covered the 300 miles between the two points. This is the longest cross-country flight made without intermediate stops and with a passenger in France.

The Ministry of War has decided, at the request of General Pistor, commanding the army of occupation, that an escadrille of aeroplanes shall be stationed at Tunis throughout the summer. An aviation park is to be formed on the parade-ground at Kassar Said.

General Goetschy, commanding 20th Army Corps, inspected on June 16th the aviation centre at Toul. Escadrille No. 1, consisting of Henry Farman biplanes under the command of Captain Schneegans, made a long flight during the afternoon.

Quartermaster Perretti, flying a Blériot monoplane (Gnome engine), made a long flight ten days ago in the district of Souk-el-Arba-Tissa in Morocco.

Lieutenant-aviator Mauger de Varennes, flying a Maurice Farman biplane, left Buc at 8 a.m. on June 15th and reached Reims at 9.10 a.m. He left again twenty minutes later and flew to Verdun, where he landed at 10.10 a.m. On the following day he returned to Buc, leaving Verdun at 2 p.m., and reaching his destination at 7 p.m. Throughout the entire journey of the two days he kept in constant wireless communication with the Eiffel Tower.

The four Deperdussin pilots, Lieutenants Rochette and Radisson and Sergeants Verdier and Didier, who are all at Bar-le-Duc, have been taking part in the command manœuvres of the 6th Army Corps.

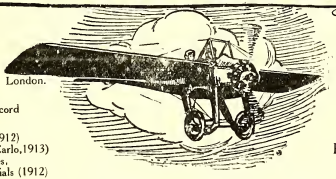
All the Hanriot monoplanes in the French army are to be fitted with the new wings recently designed by M. Pagny. They are of 18 square metres. At the same time, each of these machines is to be fitted with a Clerget rotary motor. Lieutenants Ménard, Marlin, and Mendes are at the Hanriot aerodrome at Reims practising on the later type monoplanes.

Lieutenant Personne, of the Epinal centre, left Vichy on June 18th to rejoin his escadrille when, owing to a stoppage

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of his engine, he was forced to land at Hopital-lemercier. His machine turned completely over on landing, and he was thrown out and somewhat badly injured.

At Etampes, on June 19th, the Sous-officier Debewer, while flying 300 ft. above the ground, lost control of his machine. He did not stop the engine, and as the descent became steeper he was pitched out while still 100 ft. from the ground, and was killed instantly.

On June 18th an officer-pilot flew a Maurice Farman biplane (70-h.p. Renault) from Buc to the Vidamee. This machine is the one presented to the army by S.A.R. la Duchesse de Chartres. This lady of the House of France lives at the Chateau de Saint-Firmin, situated a short way from the aerodrome at La Vidamee. On the arrival of the machine her Royal Highness walked to the aerodrome and formally delivered the biplane to the country. The officer-pilot in charge kissed hands and then gave a demonstration of skilful flying before the Duchesse de Chartres and her suite. She graciously expressed her satisfaction, and for a space serene happiness reigned in La Vidamee. The dead days are not forgotten.—W.

GERMANY.

Lieutenant von Egan Krieger, 1st Hussars, formed a new precedent for amateur jockeys a few days ago. He rode a horse at a race meeting at Magdeburg and won the event. He then flew in a monoplane to Grunewald, a distance of some sixty miles. At this place he again rode in a race and again won. Life truly gets more strenuous as the days drift by.—W.

ITALY.

Of the twenty-nine machines inspected at the recent review referred to below, twelve were Farman biplanes flown by Captain Randoni, Lieutenants Veccalle, Della, and Chiesa, and Sous-officiers Perrucca, Marazzi, Burzio, Torelli, Rosselti, Pagani, Prach, and Papa. These names have certainly no air of verisimilitude, but they are a faithful transcription of the French report.

At the beginning of the week M. Chevillard piloted a Henry Farman biplane through the reception tests ordained by the Italian army. The machine was then taken over by the Ministry of War.—W.

An aerial review, in which 29 aeroplanes took part, was held at Mirafiori in the presence of members of the Royal family and the Minister of War on the 5th inst. The 29 machines were composed of Blériots, Nieuports, and Farmans, and a Vendôme, piloted by De Dominicis, also flew unofficially. Medals of honour were conferred on many officer-aviators who had distinguished themselves during the late war. A circular cross-country flight was made later as a finish to the ceremony by all those machines present at the review. One pilot who had motor trouble had, unfortunately, to return to the aerodrome.

His Majesty King Victor Emanuel, in the early part of the month, honoured the officers and men of his dirigible P. 4 by taking a trip of 45 minutes in her over the Vigna di Valle-Bracciano district. It is now nearly a year since H.M.'s last public trip, also taken on one of the P. series. The King's interest in photography, terrestrial and aerial, is well known, and he is reported to have given particular attention to it on this occasion.

The Navicelle of M2 is now in place and all is ready for her trials. During the last week experience in navigating by night has been obtained by the pilots of one of the older dirigibles, nocturnal trips having been made in the Roman district. Trials of some recently invented weapons of destruction have also been held, "drachen" and spherical balloons being used as targets.—T. S. Harvey.

SIAM.

The two lieutenants, Ar-Wood and Nai Thip, are still at the Nieuport School at Villacoublay. They are at present practising for the military brevet. Some day they will return happily to their country, and the Nieuport will spread its fame in a new world.—W.

THE ARGENTINE REPUBLIC.

Lieutenant Alejo Tinao is at the Nieuport school at Villacoublay, and is expected to take his brevet shortly.—W.

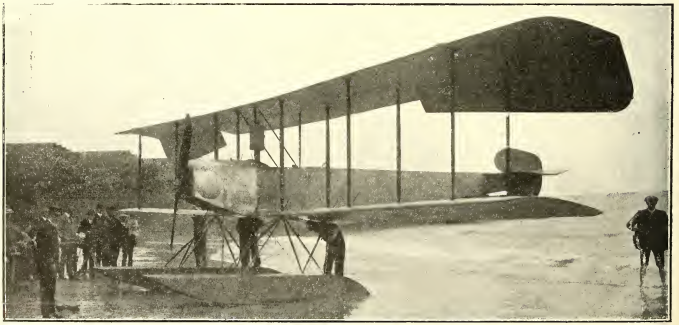
FOREIGN NOTES.

France.

As a result of the aeroplane collision at Milan during the aviation meeting of 1910, Captain Dickson initiated an action for damages against M. Thomas, the pilot of the Antoinette monoplane. This action was recently heard in the French Courts, but judgment was deferred. A counter claim for damages was put in by M. Thomas. The judgment has now been issued. Captain Dickson was ordered to pay £200 to M. Thomas, £400 to the Antoinette company and eight-tenths of the costs of the trial. The original claims were £4,000 by Captain Dickson and £3,200 by M. Thomas.

M. Brindejonc des Moulinais, who broke a wheel of his Morane-Saulnier monoplane at Dwinsk on June 15th, after having flown 340 miles from Warsaw, restarted on June 17th and flew without a stop to Petersburg, a distance of over 320 miles. The engine used in this flight is, I understand, a Le Rhône of 80 h.p.

M. Eugene Gilbert, flying a Morane-Saulnier monoplane (80-h.p. Le Rhône), made an excellent attempt on the Criterium of the Aero Club de France on June 16th. He left Villacoublay



The Avro hydro-aeroplane (100-h.p. Gnome) on the beach at Shoreham.

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at 3.15 a.m. and passed over the aerodrome of Croix d'Hins at Bordeaux at 9.50 a.m. Turning, he flew back towards Paris. Unfortunately, he was forced to land at Poitiers owing to the breaking of an oil pipe. This, of course, prevented his becoming holder of the prize at that attempt, but he will make a renewed effort as soon as possible. As it was, he covered 600 miles without a stop.

On the same day M. Marcel Cavelier, flying a Deperdussin monoplane (50-h.p. Le Rhône) at Etampes over a course of 69 miles, made an attempt on the Michelin Cup (International). He began his flight at 5.50 a.m. He finished at 7.30 p.m., having landed once or twice. In this time he covered 552 miles.

On June 18th M. Cavelier continued totalising for the Michelin Cup. He started to fly at 8 a.m., and came down at the end of the second circuit, having covered 126 miles in the time. He has thus flown 1,282 miles between June 16th and 18th.

On June 18th, having been asked to appear at the marriage of one of his friends, M. Bonnier, chief pilot of the Nieuport firm, who has flown well in England, left Villacoublay with his mechanic as passenger and flew to Evreux, which place he reached in fifty minutes. He took part in the ceremony, delivered a letter of congratulation from some naval officer pilots of Nieuport monoplanes and returned whence he came, flying placidly through a hailstorm.

On June 17th M. Prevost, flying a Deperdussin monoplane (140-h.p. Gnome) beat the world's speed records up to 130 kilometres at an average speed of 112 miles an hour. On June 18th he made a flight of 3½ kilometres in a straight line at an average speed of 118 miles an hour.

Italy.

M. Deroye, who, it will be remembered, flew down to the capital from Milan on a S.I.A. monoplane with a passenger the day before Perreyon did his fine Turin-Rome return flight, spent some time there in a mission to Members of Parliament, the conversion of several by passenger flights being announced. He then started to return by stages to Milan and got as far as Modena, which is near enough to be able to train home with honour, which he decided to do when he had a small breakage due to a rough landing. Barring this, nothing very out of the usual has to be chronicled, perhaps owing to Chevillard's hair-raising exploits at Turin in the presence of M. H. Farman, which appear to have made everyone feel very small and apologetic.

Owing to the improbability of there being a sufficiency of possible entrants, I fear that the Italian Lakes Amphibian Circuit will degenerate into a "floats only" affair instead of landing wheels *and* floats, which was to have been the sine qua non of the original scheme. Entrants may take it from me that the Italian Lakes can be very rough indeed, and sheltered harbours big enough to land in are almost non-existent. I hear that the prizes are going to be well worth troubling about.—T. S. H.

Austria.

The air of Vienna is apparently excellent for the making of height records. On June 15th, M. Perreyon flying a Blériot monoplane (160-h.p. Gnome) at that place with two passengers on board rose to a height of 15,200 feet in 37 minutes, thus beating Lieutenant Von Blaschke's record of last year.

The Calderara Hydrovol.

On Tuesday last, June 10th, by the courtesy of Lord Blyth, a most interesting lecture was given at his house in Portland Place, by Mr. Fabbricotti on the hydro-monoplane designed and constructed by Lieut. Calderara of the Royal Italian Navy. Among those present were Mr. Winston Spencer-Churchill, First Lord of the Admiralty, and Captain Murray Sueter, R.N., Director of the Air Department at the Admiralty, besides a number of other distinguished guests. The chair was taken by the Lord Mayor of London.

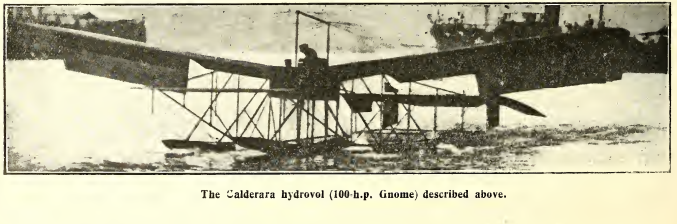
Lieut. Calderara will be remembered as the first Italian pupil of the late Mr. Wilbur Wright, and his aviator's certificate is No. 1 in the list of Italian pilots. Therefore, anything of his design must be of necessity interesting as the outcome of the experience of one of the pioneers of aviation. The machine, which he chooses to call a hydrovol, an anglicisation of the Italian word "idrovolanti," may in its general aspect be best described as a Farman monoplane, that is to say, it has a front elevator, a Farman type body with a 100 h.p. engine and propeller behind, and a pair of tail booms carrying a large tail and twin rudders, but in place of the ordinary Farman biplane cellule it has a pair of monoplane wings of 55 ft. span, lateral control being by means of very large ailerons, which are not balanced, but act downwards only as in the older Farmans.

In the more recent type, which was shown in a series of excellent cinematograph pictures, Lieut. Calderara has apparently given up the Farman type tail and has fitted what appears to be a separate monoplane tail arrangement to each of the tail booms, there being a vertical and horizontal empennage, a rudder, and an elevator on each boom.

The chief novelty in the machine seems to be in the float arrangement which consists of two long floats placed very wide apart and a shorter and bulkier float placed slightly further aft in the centre. These floats are, one gathers, of the same type as the Avion floats which are now being introduced into this country, and a point in their design which is particularly worthy of note is that underneath each of the longer floats there are small planes fitted which force the floats proper up to the surface of the water when the machine begins to move fast, these small planes acting apparently in the same way as the Guidoni palettes, to which reference has been made from time to time in this paper.

The advantage of this three-float system is that it gives the wing stays a very good angle, but it seems to have the disadvantage that it entails a veritable forest of struts in the chassis which must necessarily increase head resistance, and numerous pilots of the writer's acquaintance also object that owing to the outer floats being so far apart there is considerable danger in alighting on a rough sea that one float may touch first and swing the whole machine round so that she will roll one wing tip into the water and then probably turn turtle.

Mr. Fabbricotti assures the writer that the machine has been used in very rough seas, especially at the same time as the Monaco meeting was in progress in France. Evidently ap-



The Calderara hydrovol (100-h.p. Gnome) described above.

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preciating this possible difficulty, Lieut. Calderara has built the machine very high out of the water, and Mr. Fabbricotti explained in his lecture that he had adopted the monoplane construction and the very pronounced dihedral angle between the wings in order to avoid any chance of the wing tip coming in contact with the water, though this design would be likely to cause heavy lateral rolling. Of course, it must be understood that the machine is as yet in a somewhat experimental state, and there is obviously plenty of room for improvement, but as the outcome of the experience of so distinguished an officer pilot as Lieut. Calderara, it is of very considerable interest. The vote of thanks passed to Mr. Fabbricotti for his lecture was thoroughly well deserved.

Lieut. Calderara has been in England some time, and one gathers that he is arranging for machines of his design to be built in this country. During his absence his machine has evidently not been idle, as the following note from the "Corriere della Sera's" Spezzia correspondent on June 15th indicates: "Capt. Pegna, of the Naval Engineers, piloting the hydrovol constructed by Lieut. Calderara, with a 100-h.p. engine, executed this evening a series of magnificent flights around the bay and the battleships, frequently landing on the water, and rising again with admirable promptitude and reaching considerable heights. During the virages around the Dreadnought "Dante Alighiere" he was enthusiastically cheered by the crew."

One hopes that ere long there will be an opportunity of comparing the performances of one of these machines with those of purely British waterplanes such as the Short and Avro.

A Zeppelin Lesson.

Last week-end one or two papers contained a brief note to the effect that the Zeppelin Naval dirigible "L.1." recently carried out a flight of 400 miles over the North Sea. It has already been noted in The Aeroplane that the "L.1." was to be used on the German naval manœuvres which started early this month, but the German Press has very carefully excluded from its columns any word of what has been done either by the dirigible or by the aeroplanes which accompanied the fleet.

However, the writer is in a position to state that one evening during the period of the manœuvres the skipper of a steamer off the Terschelling Bank observed at 7.30 p.m. a squadron of the German Fleet pass, on a north-westerly course. At 9 p.m. a Zeppelin dirigible passed overhead on the same course. Twenty-four hours later the same steamer was in approximately the same position and sighted the same German squadron and the same dirigible returning in the opposite direction, the obvious assumption being that the dirigible had been at sea for twenty-four hours in company with the ships in question.

Those who still disbelieve in the effectiveness of the airship for naval purposes will do well to read the lesson of this incident aright. A naval officer of considerable experience tells the writer that the period over which the trip extended would be sufficient for the ships to travel from the Terschelling Bank to almost any point on the British coast without undue pressure. The fact that the dirigible was an hour and a half behind the ships going out would merely place her 25 to 30 miles behind them, so that they would be well within her field of observation all the time, and she would, of course, have a view for a considerable distance ahead of them provided the weather were clear, and at the approach of thick weather she could pick them up quite easily and be right over their heads inside of an hour. The point is that a dirigible cruising directly over a fleet in this way would sight an opposing fleet long before that fleet could sight her consorts, and being in touch either by wireless or by semaphore with her consorts she could always keep them out of sight of a hostile fleet, even though the hostile fleet sighted the airship. In this way it would be possible for an attacking force to out-manœuvre our own defence fleet and strike where it wished on the coast.

It must be remembered that we have at the present moment no aircraft really capable of preventing such manœuvres, for though our coast defence aeroplanes could very possibly ward off aerial attack by airship they could not at present venture far from the coast, and in clear weather a dirigible could perform its functions as an aerial scout without coming within 30 or 40 miles of the coast line, for its duties would be confined to warning its own fleet of the proximity of British warships.

This Zeppelin performance is really a matter that the general Press should take up, and use as an object lesson for the necessity for the immediate development of the airship branch of the Naval Air Service. It is generally known that the Admiralty is fully alive to the situation, but public feeling must be roused if the necessary money to build an adequate air-fleet is to be forthcoming.

The Testing of the Astra-Torres.

On Thursday morning, the 19th, the Navy's new dirigible, the "Astra-Torres," finished her second 12 hours' mooring test, so that she has altogether spent 24 hours moored in the open exposed to whatever weather might happen. Immediately afterwards the use of the ripping panel was tested with satisfactory results. It may be well to explain that the ripping panel is a section of the envelope of a balloon so arranged that on pulling a cord this particular section can be ripped out at once, so that the balloon immediately loses sufficient gas to prevent it from lifting, and in a short time becomes absolutely deflated. The idea is to prevent a balloon on touching the ground from being bumped along owing to the wind blowing on a partly inflated envelope and possibly damaging the car and its inmates. If the ripping panel is pulled out when the balloon approaches close to the ground the car stops practically where it touches.

It should be noted that in the "Astra-Torres" mooring tests, the mooring mast and nose-cap, which is apparently a thoroughly British product, was used with great success. The nose-cap is a large hollow cone attached by its apex to the mast, and free to swing in any direction. The nose of the balloon is brought up into the inside of this cone by appropriate tackle, and secured there. The balloon is thus free to move in every direction from that point, so that as the direction of the wind alters the balloon follows it, and always meets it end-on, thus decreasing the strains everywhere. There is the additional advantage that the nose-cap being attached to the mast acts as a deflector, and the wind striking it is thrown off all round so that quite a large area of the front of the balloon is protected entirely from the direct force of the wind.

Among those concerned with aeronautics the credit for this particularly useful invention is usually given to the Royal Aircraft Factory, but, as a matter of fact, the nose-cap idea was first used on the late lamented "May Fly" at Barrow-in-Furness. At first an elaborate screen was erected to shield the nose of the "May Fly" when she was moored out in the dock, but it was found that the machine developed a trick of working round and punching holes in herself with the screen. After this had happened once or twice the screen, which had taken many months to build, was destroyed with great rapidity and many axes in the course of a few moments in order to save the machine from further damage. Thereafter the simple but eminently satisfactory nose-cap was designed by the Naval officers in charge, and it remains a particularly bright spot in a series of experiments which were otherwise not notably successful, though one has a suspicion that the "May Fly" has not altogether passed into the realm of forgotten things even now.

Mr. Bell's Progress.

One is glad to be able to announce that Mr. Gordon Bell is making excellent progress. The operation of trepanning was performed very successfully by Mr. Trotter, and Mr. Bell is now practically conscious, though he is not yet allowed to know how or why he came into the hospital. He is in no danger of losing his sight, nor is his face likely to be seriously marked. A propos of the accident, it is now certain that shortage of petrol had nothing to do with it, for the day after the accident some ten gallons of petrol were taken out of the main supply tank. The gentleman who gave the information that the tank was almost empty evidently mistook the small gravity tank on the top of the machine for the main supply, and this tank would naturally empty itself through the carburetter when the machine was in the tilted position that it was after the smash.

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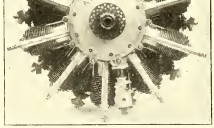
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Questions in the House.

Oral Answers, June 17th.

Aircraft.

Aeroplane Accidents.

13. Captain Faber asked the Secretary of State for War whether the responsibility for allowing the aeroplanes that lately led to the deaths of Lieutenants Harrison and Arthur being allowed to fly in their deteriorated condition rests upon the officer commanding the flying wing?

Colonel Seely: I cannot admit that these aeroplanes were in a deteriorated condition as stated in the question. As regards the first accident, the Cody aeroplane had recently been thoroughly overhauled and returned as being in a safe condition for flying. As regards the second accident, the investigation of the question as to who was responsible for the condition of the wing tip which broke has not yet been completed.

Captain Faber: Will the right hon. gentleman tell us, when it is completed, who was responsible?

Colonel Seely: I desire to give the fullest information to the House, but I am very much afraid from the inquiries that we shall not be able to find out how this defect in the Cody aeroplane arose, or who was responsible.

Earl Winterton: Are reports always furnished to the right hon. gentleman by competent persons when these accidents take place? If so, will the right hon. gentleman cause the reports to be laid on the Table of the House?

Colonel Seely: Most careful reports are furnished to me of every accident. I deprecate the suggestion contained in this and other questions that the officers responsible for seeing that the machines are in a fit condition are not fulfilling their work well. All my information tends to show that our officers are doing their duty admirably, and that our aeroplanes are probably in a better condition than those of any other nation.

Captain Faber: Is the right hon. gentleman aware that the officers of the Flying Corps hold a totally different view, and that they think that these officers were murdered by carelessness?

Colonel Seely: I think that that is a most improper question. I know that the statement made is totally devoid of foundation.

Purchase of Aeroplanes.

18. Captain Faber asked the Secretary of State for War whether the eight machines recently purchased by the War Office and which were second-hand were included in the list which he gave of aeroplanes ready to fly and effective for war purposes; whether the list was as follows: A modern 80 horse-power Henry Farman biplane, two experimental Henry Farman biplanes of a type which has since been abandoned, one old 50 horse-power school biplane used for tuition for two years past, one 35 horse-power experimental biplane, one 80 horse-power British-built Farman biplane of experimental type, one 60 horse-power British-built biplane of experimental type designed for a hydro-aeroplane, one 70 horse-power Nieuport monoplane three years old; whether only one of these, the first-named, can be reckoned an effective machine; and whether, with two exceptions, these machines have since been condemned, whilst of those two the 80 horse-power biplane is being re-built whilst the other, the monoplane, had already been condemned by the Government monoplane committee?

Colonel Seely: The hon. and gallant gentleman is apparently alluding to a purchase of seven machines which was the subject of a question put by the hon. gentleman the Member for the Wirral Division on the 4th instant. I have nothing at present to add to the information which I gave in reply to that question.

Captain Faber: Will the right hon. gentleman say how many of these machines are able to be flown to-day?

Colonel Seely: I will refer the hon. gentleman to the reply I have already given on that point. I think that he will be able to ascertain there all that he wants to know.

The Accidents Investigation Committee of the Royal Aero Club.

Report on the Fatal Accident to Lieut. Desmond L. Arthur when Flying at Montrose on Tuesday, May 27th, 1913, at about 7.30 a.m.

Lieut. Desmond L. Arthur, flying a "B.E." biplane, No. 205, fitted with a 70-h.p. Renault engine, on Tuesday, May 27th, 1913, at about 7 a.m., left the flying ground at Montrose for an ordinary practice flight. After being in the air for about thirty minutes he was descending in a left-hand spiral at about 2,500 feet and had made one complete turn. Shortly after this the aircraft appeared to change on to the right bank, and about this time the outside tip of the top right-hand plane was observed to fail and the planes of the right wing collapsed. About the same time a puff of smoke was seen to be emitted from the engine, and the sound of the acceleration of the engine was subsequently heard. The aircraft fell comparatively slowly to the ground. The pilot was observed to fall from the aircraft shortly after the acceleration was heard. The pilot struck the ground about 160 yards from the place where the aircraft fell, and was killed instantly. The aircraft was completely smashed.

The committee sat on Monday, June 2nd, 1913, and Tuesday, June 10th, 1913, and received the report of the Club's representatives. Major F. H. Sykes, Commandant of the Military Wing of the Royal Flying Corps, Major C. J. Burke, O.C. No. 2 Squadron, Montrose, and Major R. Brooke-Popham, O.C. No. 3 Squadron, Larkhill, attended and gave evidence on various points raised by the committee. Mr. Mervyn O'Gorman, the superintendent of the Royal Aircraft Factory, also attended before the committee, with Mr. F. Green and Mr. Peters, two officials of the Factory.

From the consideration of the evidence the committee regards the following facts as clearly established:—

(1) That the aircraft was built at the Royal Aircraft Factory in June, 1912, and rebuilt there with new wings in August, 1912, and since that date had been flown fairly regularly by officers of the Royal Flying Corps.

(2) The examination of the wrecked aircraft clearly indicated that the top right-hand wing-tip had been broken at some time or another and repaired in three places. The main rear spar had been broken in one place about eleven inches from the tip, and the member forming the extreme edge had been repaired in two places, one on either side of the rear main spar.

(3) The joint between the new and the old piece of the main spar had been made in a most improper and unsafe manner. The taper splice in the woodwork, about 7½ inches long, was very roughly made and badly fitted, there being places in which the glue was ⅛-inch thick. The splice was subsequently bound with whipcord which was not treated with cobbler's wax or varnished to prevent it becoming loose. The new portion of the spar was not varnished, but left in its natural state.

(4) After the repair had been made, new fabric was put over that portion of the wing affected by the breakage. The new fabric was of different material from that of the rest of the wing. The representatives of the Royal Flying Corps and the Royal Aircraft Factory reported that their records contained no entry of this repair having been made to the wing of this aircraft since it was rebuilt.

(5) Pieces of the wing and struts were picked up about a mile away from the spot where the aircraft struck the ground, and in the direction from which the aircraft was seen to come, and in such positions that they must have fallen from the aircraft whilst still in the air.

(6) There was practically no wind at the time of the accident.

(7) Lieut. Arthur was properly strapped into the machine before starting the flight. The belt was found broken, but not unfastened.

Opinion.—The committee is of opinion that the primary cause of the accident was the failure of the faulty joint in the repair to the rear main spar. This joint, subjected as it neces-

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sarily was to vibration when flying, and probably at the last only held together by the wrapping of cord, the glue having failed previously, eventually gave way. The failure of the joint caused the collapse of the wing-tip, which broke a transverse rib which was acting as a strut. The loss of this strut caused the wing to collapse progressively from this point towards the fuselage.

The committee is further of opinion that the repair referred to above was so badly done that it could not possibly be regarded as the work of a conscientious and competent workman.

The committee was furnished with copies of the various instructions and orders for flying, as well as the standing orders in connection with the use of aircraft. These orders are most complete and comprehensive.

Recommendations.—This accident points to the necessity for expert superintendence of every repair, however slight, of the structure, and independent inspection of such repair when completed, full details being recorded in the history sheet of the aircraft. After any important repair to the structure has been made it should be so marked that both the workman by whom it was done and the examiner who subsequently passed it as fit for service can be identified.

Report on the Fatal Accident to Mr. Geoffrey England when Flying at Lark Hill, Salisbury Plain, on Wednesday, March 5th, 1913.

Mr. Geoffrey England, flying a Bristol monoplane fitted with an 80-h.p. Gnome engine, started from the company's sheds at Lark Hill on Wednesday, March 5th, 1913, at 12.8 p.m., with the intention of remaining in the air for upwards of an hour, this being a test for the Roumanian Government for which the aircraft was destined. At 12.40 p.m., having completed a circular flight at a height of at least 3,000 feet, he was observed to be descending as if intending to return to the starting place. At a height of about 600 feet the left wing of the aircraft broke, a considerable portion of the tip became detached in the air, and the aircraft dived to the ground. The aviator, who was not thrown out of his seat, was killed.

The committee visited the scene of the accident on Friday, March 7th, 1913, and spent a considerable time in examining the wreckage "in situ," and afterwards sat in committee at Amesbury and took evidence of eye-witnesses. The representatives of the British and Colonial Aeroplane Company attended and gave evidence on various points raised by the committee. Further meetings of the committee were held on Wednesday, March 12th, 1913, Monday, April 7th, 1913, and Monday, June 16th, 1913.

From the consideration of the evidence the committee regards the following facts as clearly established:—

(1) The aircraft was built in February, 1913, and had been flown three times previously.

(2) The wind at the time of the accident was higher than when the pilot started his flight, and was blowing at a rate of not less than 30 m.p.h.

(3) The aircraft at the time of the accident was turning to the right. It was descending at a steep angle, but apparently normally, and its direction of flight was towards the sheds. The engine was firing intermittently, being switched on and off by the pilot.

(4) When about 600 feet from the ground a portion of the structure of the left wing gave way, and about 6 feet in length of the left wing-tip became detached in the air from the steel spars and fell about 160 yards away from the rest of the aircraft.

(5) The pilot decided to descend earlier than he originally intended. The reason why he did so is not known.

Opinion.—The committee is of opinion that this accident was caused by the failure of the left wing, due to the fracture of the ribs, but whether the original failure was confined to the wing-tip alone is not precisely clear. In any case, the failure was due to want of sufficient strength in the structure to withstand the extra stresses produced either by a violent gust of wind or by sudden warping when the aircraft was planing downwards at a high speed.

Since the date of the investigation the committee has been in communication with the British and Colonial Aeroplane Company, the makers of the aircraft, with reference to some tests which the committee would like to carry out on the wing of a complete machine. The company has expressed its willingness to carry out tests, but the detail of the tests has not yet been decided upon. The committee feels that this report should not be delayed any longer on this account and is therefore issuing it. The result of tests when carried out will be issued in a supplementary report.

Aeroplanes at Henley.

The Secretary of the Phyllis Court Club, Henley, writes:—

"I have the honour to inform you that I was surprised to see a reference in your issue of the 29th ult. to the application which my Committee made to the Thames Conservancy for permission to hold a display of hydro-aeroplanes on the reach of the River Thames adjoining the grounds of the Phyllis Court Club, in which you refer to my Committee's application as having been made with a view to the suggested display taking place during the Henley Royal Regatta week.

"My Committee may be ignorant, as you so courteously term it, of the capabilities of a hydro-aeroplane, but they are certainly not wanting in knowledge in matters connected with Henley Regatta, and nor, I think I am safe in saying, would they endeavour to refer in writing to a subject upon which they had not previously obtained the true facts.

"The request was a simple one to gain permission to test hydro-aeroplanes upon the broadest stretch of the upper reaches of our principal river, under proper conditions of control, etc., at a date to be fixed towards the end of July or the beginning of August, i.e., exactly one month after the dates which have already been fixed for the Henley Royal Regatta.

"I may mention that the suggestion was not made with a view to ascertaining how many people could be killed within a given space, but partly in the realisation that it might some day be necessary for hydro-aeroplanes to alight and rise from whatever available inland water there may be at a distance from our shores, and partly in the hopes of removing some of that ignorance to which you have already been so good as to draw attention."

[It gives pleasure to publish this letter from one who evidently knows how to give as good as he gets. One can only cry, "touché" and admit the error. The writer, misled by a report in a daily paper, understood that Henley Week was intended. However, for the benefit of the sportsmen of the Phyllis Court Club, it may be well to point out that even without the crowd, the reach from Temple Island to Henley is not wide enough to permit of a waterplane flying circuits without going over the land on each side, except when a highly skilled pilot chose to do steeply-banked turns, and lengthwise the reach is rather short to make it worth while to fly straight up and down and alight at each end. Still, for short passenger flights, the reach would do nicely enough, and the Conservancy people need not fear the effects of erosion on their precious banks.—Ed.]

Monaco.

He thought he saw a wingéd punt
Go bounding o'er the main.
He looked again and saw it was
A Hydro-aeroplane.
"They'll have to redesign," said he,
"And try and try again."

[The above anonymous comment, received shortly after the Monaco meeting, seems to size up the present situation rather neatly.—Ed.]

Public Aerodromes.

The proprietor of another aerodrome writes that without in any way wishing to belittle the philanthropy of the proprietors of Brooklands he desires to point out that in the matter of giving free accommodation to visiting aviators Brooklands has the advantage that it is not dependent on aviation for its existence, whereas other aerodromes are, and that if aviators are to be allowed to use other aerodromes free of charge these aerodromes could not exist, whereas Brooklands could go on whether aviators were there or not.

The Morane-Saulnier Monoplane.

A great deal of interest has been caused recently by the Morane-Saulnier monoplane flown by M. Brindejonc to, at and from Hendon, so that a somewhat detailed description of the type may be appreciated. Primarily, the machine is a small span monoplane of what is, I believe, generally known as the Blériot type. It is, however, really a sort of half-way stage between the Blériot and Nieuport, though it differs very materially from both. This particular machine was actually a 50-h.p. type into which an 80-h.p. Gnome was fitted, so that she was really being dragged through the air considerably faster than her designed speed.

The first thing that strikes one about it is the simplicity of the chassis, but when one investigates this one finds that it is the simplicity of development and not of primitiveness. The chief points to be noted about it are that the main wing cables are not attached to the supporting struts of the chassis, but to a kind of central pylon which also acts as the pivot for the hinges of the wheel-axles. The wheels, as may be seen, are carried on two independent axles hinged to this pylon with their ends sliding in horn plates, which are fitted in the angle of the front and rear struts. The foremost of the two fixed tubes is carried out beyond the struts, and to it are fixed the rubber bands to which the hinged axles are suspended.

The struts and the centre pylon are built up of steel tubing acetylene welded at the junctions, and make an exceedingly neat job. Naturally such a chassis is only suitable for a skilled pilot, as there is nothing to prevent the machine from standing on its nose if the pilot does not land sufficiently tail down, but for a skilled pilot this chassis is almost perfect. It is also worthy of note that all the main cables in the machine are spliced and not soldered.

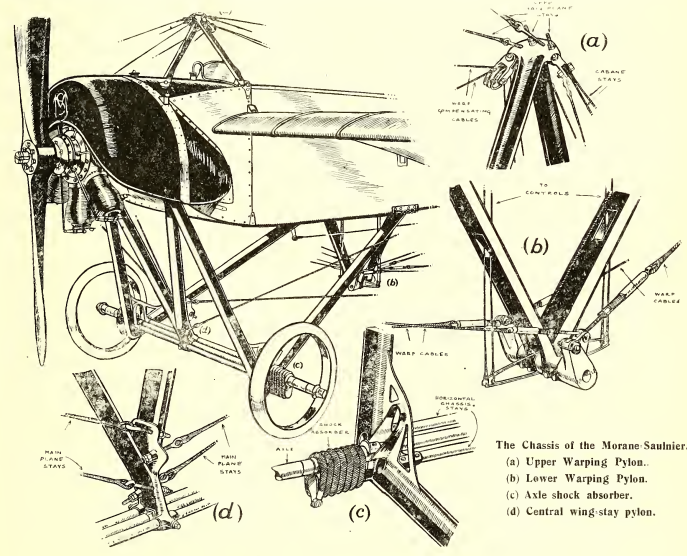
The warping pylon is an independent arrangement fixed directly underneath the control lever, and the warp operates through an ingenious arrangement of bell cranks shown in the sketch. The upper wing wires are carried to a stout and well-stayed upper pylon, and the upper warp wires run over pulleys which are themselves hinged to the pylon so that their angle can alter according to the position of the rear spar.

The Tail Arrangement.

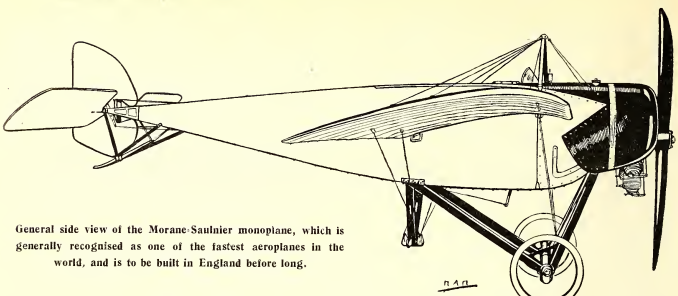
The arrangement of the tail is particularly noteworthy. There is no fixed empennage, and the elevators are simply two balanced flaps very much like the old type Blériot elevators, but for the fact that there is no fixed plane in between, and that these flaps are flat, whereas the Blériot's were cambered. The rudder also is balanced by having a good portion of its area in front of the pivot.

The Body Design.

The really outstanding feature of the machine, however, is the shape of the body. In practically every other monoplane the body tapers in plan from the pilot's seat to the tail, and in side elevation although it tapers towards the tail it retains a considerable amount of side area right up to the rudder post. In the Morane-Saulnier the exact reverse procedure is followed. The sides of the body remain almost parallel right back to the elevator, the flat top and bottom acting to a certain extent as an empennage. In side elevation the area decreases rapidly from the wings to the tail, so that for the



The Chassis of the Morane-Saulnier.
(a) Upper Warping Pylon.
(b) Lower Warping Pylon.
(c) Axle shock absorber.
(d) Central wing-stay pylon.



General side view of the Morane-Saulnier monoplane, which is generally recognised as one of the fastest aeroplanes in the world, and is to be built in England before long.

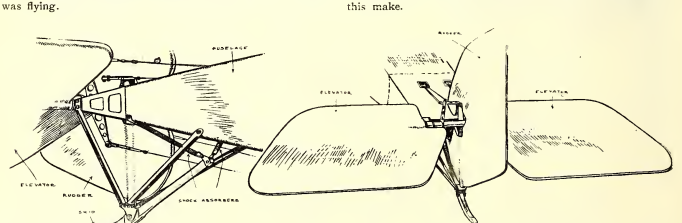
greater portion of the distance aft the side area is comparatively small. Apparently the idea in this is to overcome the trouble to which machines of the Nieuport type are said to be particularly liable, namely, that if the machine is overbanked instead of side-slipping bodily the big area aft holds the tail up so that the machine comes down on to its nose almost at once, while the use of the large fixed tail plane makes the machine slower to respond longitudionally when she has attained a really big diving speed. This may possibly account for the apparently inexplicable dives to which machines of this class are supposed to be liable. In the case of the Morane the flat top and bottom of the body should lead the air direct on to the balanced elevators, and so accelerate the response to longitudinal control.

The tail skid arrangement is simple, neat and effective. It strikes one that the control levers of the rudder and elevators are extremely light for their job. They are probably quite strong enough for the work they have to do, but it occurs to one that in the event of the machine being held back by inexperienced assistants it would be quite easy to bend one of these levers just as the machine was starting in such a way that it would lock against something else while the machine was flying.

The machine has one peculiarity which makes her very easily recognisable in the air, namely, that the leading edge of the wings is considerably shorter than the trailing edge, and the ends of the wings slope outwards from front to back. This naturally gives the warp more effect than any wings wherein the reverse plan form is adopted.

It is obvious from the small surface of the machine and the weight she carries that she must be highly efficient, but at the same time it is evident that it is a machine suitable for well trained pilots only, as she is remarkably quick in all her movements, and although she answers her controls immediately, the pilot cannot leave her alone to fly herself as it is possible to do with some machines. Whether this is a good feature or a bad one entirely depends on the personal predilections of the pilot. One thing, at any rate, is certain, namely, that the machine is one of the fastest and most efficient in existence to-day, as well as being one of the best constructed.

It is understood that these machines will, in future, be built in England by the Grahame-White Aviation Co., who are in the meantime acting as agents for French-built machines of this make.



Two views of the tail arrangements of the Morane-Saulnier monoplane.

Another Sopwith Success.

The latest Sopwith product, a tractor hydro-biplane, fitted with a 100-h.p. Anzani engine, has, one learns, been performing exceedingly well over the Solent. The machine is said to get off the water as easily as its sister machines get off the land and to handle particularly well in the air. It has already been noted that the "bat-boat" flies quite satisfactorily, and only minor troubles with accessories have prevented it from completing the Mortimer Singer course. The "bat-boat" is very handy on the water, and Mr. Hawker appears to be able to pick up his moorings more quickly even than a motor-boat could do. The all-round success of so many different types of Sopwith machines is quite one of the most remarkable things in the history of aviation either in this country or elsewhere, and does great credit to the perspicuity of Mr. Sopwith and the practical knowledge of Mr. Sigrist.

Flying at Hendon.

Thursday.

On Thursday, the afternoon's performance began with the departure of Mr. Pickles for the Isle of Grain in a new Caudron biplane (45-h.p. Anzani). A telegram announced, later on, that he had accomplished the journey in 40 mins., which means that the little machine must have been travelling at something like 102 m.p.h. in the favourable wind.

To-day a large party from the Incorporated National Association of British and Irish Millers, who had been holding a convention in London, visited the aerodrome and witnessed some excellent flying by M. Noel on a Grahame-White biplane, M. Verrier on a Maurice Farman, Mr. Temple on his Caudron, and Signor Nardini on his Deperdussin. Mr. Hamel also appeared, and after two or three beautiful flights on his new Blériot (80-h.p. Gnome), set off for Brooklands with his mechanic, M. Gondre, as passenger. These things were witnessed also by several of the visiting West African chieftains, who appear to be greatly fascinated by this latest phase of scientific progress.

Later in the evening M. Debussy, the latest Bréguet pilot from France, took a brand-new Bréguet biplane (80-h.p. Canton-Unné) for its maiden flight and showed himself to be well deserving of the reputation which he brings with him.

Saturday.

Though the morning was dull and cloudy, the sun, tired of seclusion, appeared during the entire afternoon, whilst the wind for once had business elsewhere. At 11 o'clock in the morning Mr. Sydney Pickles, on the Caudron biplane (45-h.p. Anzani), left for Brighton with the intention of gaining his superior brevet. In due course he landed at Shoreham, and later returned on his way to Hendon, at which place he landed shortly after 4 o'clock, later taking part in the speed handicap.

The speed handicap was held at 4.15 and consisted of two heats and a final. In the first heat were Mr. Noel (Grahame-White biplane, 50-h.p. Gnome) and Mr. Temple (Caudron biplane, 35-h.p. Anzani). Mr. Temple retired in the fourth lap owing to a slight accident. In the second heat were M. Verrier (Maurice Farman biplane, 70-h.p. Renault), Mr. Brock (Deperdussin monoplane, 35-h.p. Anzani), and Mr. Pickles (Caudron biplane, 45-h.p. Anzani). The heat was won by Mr. Pickles, with Mr. Brock second. In the final were Mr. Pickles, Mr. Brock, and Mr. Noel. Half-way through the final Mr. Noel descended owing to motor trouble. Mr. Pickles won, and Mr. Brock came in a good second. Both Mr. Noel and Mr. Pickles made innumerable passenger-flights during the afternoon.

Lieut. C. L'Estrange Malone, R.N., made several passenger-flights on the Maurice Farman biplane (70-h.p. Renault) recently delivered to the Admiralty, going to Ranelagh and back with Eng.-Lieut. Aldwell, R.N., and so the day passed with much happiness to all concerned.

Sunday.

The sun shone, neither wind nor rain appeared, and, in spite of the fact that it was Ascot Sunday, innumerable devotees of the sport of aviation arrived that they might watch their favourite pilots gambol in the air.

The flights made during the afternoon were so many that it would be vain and foolish to enumerate them in detail, but perhaps a brief survey of the names of the excellent pilots would gladden the hearts of those who, full of sorrow, were unable to be present.

M. Verrier (Maurice Farman biplane, 70-h.p. Renault), Mr. J. L. Hall (Blériot monoplane, 50-h.p. Gnome), Mr. Brock (Deperdussin monoplane, 35-h.p. Anzani), Mr. Cheeseman, Mr. Manton, and Mr. Noel, the three last on a Grahame-White biplane (50-h.p. Gnome), all flew frequently during the afternoon.

Mr. Claude Grahame-White, the admired of all humankind, arrived during the course of the afternoon on a Grahame-White biplane from Taplow Court, Maidenhead, where he had honoured Lord Desborough with a visit.—F. E. S.

Competition at Brooklands.

The tenth and last event at the Midsummer meeting of the Brooklands Automobile Racing Club on June 21st was a cross-country aeroplane handicap for three cups, or £50, £25, and £10, respectively, at option. There were ten entries, only one machine failing to put in an appearance, namely, the Flanders biplane (45-h.p. A.B.C.), entered by Mr. A. Dukinfield Jones. Of the nine starters all but one were equipped with Gnome engines, the Sopwith biplane having an 80-h.p., and the seven remaining engines 50-h.p. The odd engine was a 60-h.p. R.E.P., mounted in the Vickers monoplane, piloted by Mr. A. Knight.

First off the mark was Mr. H. Spencer, in his Spencer biplane, with a start of 12 mins., 10 secs. After him went Mr. W. Bendall in a Bristol biplane, 10 mins. 53 secs.; then Mr. F. W. Merriam in a similar machine, 10 mins. 22 secs. Two Vickers biplanes went next with 9 mins. 54 secs., piloted by Mr. F. G. Andreae and Mr. W. G. S. Mitchell, followed by Mr. M. Ducrocq in his Henry Farman biplane, 8 mins. 5 secs. The Vickers monoplane and the Blériot, the latter piloted by Mr. R. H. Barnwell (both entered by Capt. H. F. Wood, of the Vickers Co.), started together, with 3 mins. 37 secs. The Blériot shot ahead at once in a very promising manner, but lost ground—or rather lost air—somewhere, for the Vickers led the Blériot back from the turning point (three miles away) by some distance on the first circuit.

Hardly were the monoplanes away when Mr. Spencer returned and set on his second journey, followed at a couple of hundred yards by a pretty trio of biplanes arranged in the form of a pawnbroker's sign. As they all banked together to turn for their second outward journey the effect was so graceful that a murmur of pleasure and appreciation arose from the watching crowd.

Then Mr. Hawker started in the Sopwith biplane, scratch—very scratch indeed. But the machine leapt away so readily and with such speed that one began to think she would make up the time. After this the three remaining machines, Mr. Ducrocq's H. Farman, the Vickers monoplane, and the Blériot, completed their first circuit in the order named. Soon Mr. Spencer hove in sight once more, much sooner than he was expected, and retired.

The first home in the second and final circuit was Mr. Mitchell in one of the Vickers biplanes, having completed the course in 20 mins. 39 secs. Next came Mr. Merriam in a Bristol biplane, 21 mins 15 4-5 secs; third came Mr. Ducrocq in his Henry Farman, 21 mins. 34 secs. The Blériot came fourth, and the Vickers monoplane did not appear, having retired to a golf links propinquitous to the course. At the end of his first circuit Mr. Hawker brought the Sopwith machine round at a tremendous rate, with a bank like the Crédit Lyonnais or any other of the very best French banks, but he could not achieve the impossible, and so the race ended as stated above.

On Sunday Mr. Hamel turned out for the first time with his new tandem Blériot (80-h.p. Gnome), and took up a number of passengers in a very nasty wind. Among the passengers was Lady Victoria Pery, daughter of the Countess of Limerick, who went up twice. The second time Mr. Hamel took the plucky little lady to 6,500 ft., and she appeared to be thoroughly pleased with the experience. This is probably the altitude record for those whose names appear in Debrett.

Mr. Barnwell also flew very well on the 50-h.p. Blériot, which has recently been acquired by the Vickers School. Mr. Ronald Kemp, who is now one of the testing staff of the Royal Aircraft Factory, essayed a flight on the same machine at a period when the wind was particularly puffy, but came down after one circuit, remarking that he preferred to do so while the machine was in one piece, and that he would rather experiment when there was less wind. Mr. Merriam also flew a few circuits on one of the Bristol school biplanes, and received a considerable bumping.

A Patriotic Effort.

The management of the Palladium music-hall is to be complimented on its good intentions, but one wishes that at least one of the said intentions would go where it could be used for "the great pavement." This week's programme is, in the main, up to the standard of excellence in this popular hall—*en passant*, Mr. Phil Ray would be even funnier if he adopted ordinary well-made evening dress, instead of a grotesque costume which is simply puerile and a relic of a by-gone age in humour. Madame Alicia Needham's new "patriotic song-cycle," as given by such accomplished singers as Miss Ada Forrest, Miss Alice Lakin, Mr. Lloyd Chandos, and Mr. Thorpe Bates, and accompanied by the composer herself, was artistically and vocally a pure joy, and was received with an enthusiasm

which even Mr. Robey or Miss Lloyd might have envied—so, as usual, the best is good enough even for a popular audience. But what we went out for to see was, "War in the Air," written by one Frank Dupree, "designed to arouse the National Consciousness to a sense of its hovering Peril"; and "Presented under the patronage of the Aerial League of the British Empire." Really the Aerial League ought to be a little more careful to make sure beforehand that the things or persons with whom their name is linked are worthy objects of patronage. The show was not quite bad enough to be really funny, though apparently the way in which the "Air Office" of 1915 is to run itself, according to the author, is peculiar enough to convey the impression that Colonel Seely will by then have been transferred to the new Department—which will, of course, never exist. The performance opens with rather a pretty scene, dated 1900, in which a youthful enthusiast is playing with a palpably 1913 pattern model aeroplane; incidentally he says his prayers aloud at his mother's knee, a piece of bad taste which one does not recollect any other music-hall management permitting, and evidently dragged in by an author who thinks that the worst sentimentalism of "East Lynne" is still likely to appeal. The next scene represents the interior of a conning tower, apparently a cross between a dungeon and a Tube station, peopled by officials whose uniforms resemble in their colour scheme those of blue-clad chauffeurs after returning from the Derby on a dusty day. There is also a wireless plant which crackles dutifully, and a Hero, also clad as a dusty chauffeur, whose methods remind one of the old Surrey Theatre, and a faithful henchman who speaks Irish as only an Englishman can. In the next scene the human properties of the show are transferred to the top of the said conning tower, which commands an excellent view of the Tower Bridge, prettily illuminated, and an outlook across London to the Crystal Palace on a Brock's Benefit night. Two airships of Zeppelin design, and apparently of the dimensions of the "Beta," evolute unsteadily, giving excellent imitations of performing pigs, what time the various chauffeurs distractedly swivel about two objects, which, at first, one took to be lamp-posts which had been bent by the performing dirigibles, but which ultimately, one gathered, represented high-angle guns, such as those vaunted by Colonel Seely, and apparently as useful at the moment. Finally, after the chauffeurs had given an excellent imitation of taxi-drivers watching Mr. Hamel at Hendon for the first time, the late lamented "Portly Piggott" monoplane, or its ghost, flopped from behind a canvas cloud, swung out over the audience, and retired, tail first, on to the stage, where it squatted in an attitude reminiscent of Buster Brown's dog Tige to be hailed as the saviour of London from the Beta-Zeppelins.

But go and see the rest of the programme, Mrs. Needham's songs are alone worth the money, and the composer's distinctly Irish musical accent makes them the more charming.

If any music-hall management wants something patriotic to compete with them, and there are fashions in such things, his only chance is to put on a first-class baritone with a male chorus to sing Sir Charles Stanford's and Mr. Henry Newbolt's fine "Sea Songs." "Drake's Drum" and "The Old Superb" would bring down the house, and would awake real patriotism. This pinchbeck machine-made slop of Mr. Dupree's won't do in the London of 1913.

An Aerial Mrs. 'Arris.

The newspapers on Tuesday last were evidently finely hoaxed by some would-be humorist in the neighbourhood of the Thames Estuary. Full of corroborative detail intended to give an air of artistic verisimilitude to an otherwise bald and unconvincing narrative, a report was sent round to the effect that one Fairbairns had flown a 350-h.p. waterplane from the neighbourhood of Brooklands to Shoeburyness in about an hour, and that he had fallen into the sea in sympathetic propinquity to a boat occupied solely by a friend, one Marshall, who was the sole witness of the tragedy, and who, according to the report, endeavoured to open the top of the glass-plated conning tower. He was unable to do this before the machine sank, dragging with it the unfortunate Fairbairns.

Later it was reported that he was alive and well after having swum two miles to the shore.

Unfortunately for the story no one named Fairbairns or Marshall is known to those who are best acquainted with the doings of aviators in this country, and it is fairly certain that no such thing as an aeroplane with a 350-h.p. engine exists. Several constructors would willingly give anything up to £2,000 for such an engine.

It is said that a person named Fairbairns entered immediately the "Daily Mail" announced its big prizes recently, but that is all that has ever been heard of the name. There are certainly entries which never materialise in these big competitions.

At the moment of going to press the true story which formed the basis of this romance has not yet materialised.

The Salmet Waterplane.

As was noted in The Aeroplane recently, M. Henri Salmet, who flew so effectively in the "Daily Mail" advertising scheme last year, has now built a hydro-biplane with which it is understood the "Daily Mail" is associated, the intention being that M. Salmet shall demonstrate with this machine at various points on the coast of Great Britain. The machine is at present at Brooklands, where it will make its preliminary test flights.

So far as this country is concerned the machine is of a novel if not quite original type, resembling somewhat in its general arrangement the Curtiss four-seater which was illustrated last week. The hull of the boat is of peculiar design, having a bottom coming to an edge without actually forming a keel. What would in an ordinary boat form the counter is in this machine tapered far aft to form a fairly long fuselage on which is mounted the tail, the elevator, and a large balanced rudder which is placed above the tail. At first sight it strikes one that with so large a rudder placed so high there would be an enormous twisting strain on the comparatively small fuselage, and that the staying of the tail is also on the light side, but doubtless the correctness of this view will be proved in the test flights before the machine is taken on to the water. Underneath the fuselage and behind the deepest part of the boat proper a water rudder is fitted, acting in conjunction with the air rudder.

Above the boat are placed the main planes, which appear to be almost identical with those of the Avro biplanes. Mounted over the deck of the boat is a 100-h.p. A.B.C. engine, which drives a tractor screw by chain gearing, the propeller-shaft being situated in the neighbourhood of the upper plane, the propeller tip only clearing the fore-deck thanks to a little trough built therein, so that at the lowest point the tip of the propeller is actually inside the deck. The pilot is seated in what would be the stern of the boat, and control is by means of a wheel mounted on a tubular rectangular arch somewhat in the manner originated in the Deperdussin machines. On each side of the boat are fitted landing wheels on a tubular chassis pivoting somewhat in the manner of the Blériot.

Altogether the machine is a most interesting production, and if it flies anything like as well as M. Salmet does it should be a most valuable addition to the existing list of waterplanes.

"Patriotism and Ten per Cent."

Mr. E. C. Powell, of 39, Lombard Street, E.C., writes:—"It is stated that the appeal recently addressed by the Imperial Maritime League to the Mayors of large towns and Lords-Lieutenant of British counties suggesting co-operation in aerial defence has fallen almost entirely on deaf ears. May I suggest that this apathy is due to public ignorance?

"To the majority of the public dirigible airships are almost a myth and are certainly not regarded as present-day practical realities. No belief in the urgent necessity for facing this factor in the aerial problem will be aroused until the public have ocular demonstration of the uses and possibilities of airships. No doubt the want of the driving power of public opinion is also at the back of the slowness of the Government to move in the matter.

"As a commercial proposition, dirigible airships on the Continent are making good profits from carrying passengers and displaying advertisements. A service of such airships in this country should prove a similar success, and, while awakening public interest, would at the same time afford a means of providing a training school for pilots, and an opportunity for the foundation of an airship building industry in Great Britain.

"As a commercial man, patriotism with ten per cent. might rouse even John Bull from his slumbers."

The Week's Work.

MONDAY, June 16th.

R.F.C., Central Flying School.—Fine, clear. Moderate S.E. wind. On Avro 430, Lt. Reilly 30 mins, to Lark Hill and back; Lt. Maude 20 mins; Lt. Wanklyn with A. B. Townsend 50 mins; Cpt. Webb Bowen 25 mins. On Avro 432, Lt. Brodribb 35 mins; Lt. Morgan 40 mins, Lt. Wanklyn 15 mins, Maj. Fulton with Lt. Wilson 45 mins. On Avro 433, Lt. Picton Warlow 35 mins to Andover and back; Lt. Hordern 35 mins to Andover and back; A.M. Higginbottom with Sergt. Little 53 mins, with A.M. Baldock 45 mins. On Avro 448, Lt. Fuller 45 mins, Lt. Corballis 30 mins, Sergt. Jarvis 20 mins, Cpt. Webb Bowen 35 mins.

On M. Farman 403, Lt. Shepherd 8 mins, Lt. Cutler 55 mins, Cpt. Hoare 15 mins, Lt. Sitwell 25 mins, Lt. Gaskell 18 mins, Lt. Newall 20 mins. On M. Farman 418, Lt. Shepherd with Cpt. Hoare 38 mins, with Lt. Newall 35 mins. On M. Farman 427, Lt. Shepherd 7 mins, Lt. Noel 23 mins, Lt. Sitwell 28 mins, Lt. Gaskell 23 mins. On M. Farman 431 Asst-Paymr. Lidderdale 50 mins to Andover and back, and 25 mins; Master Mch. T. O'Connor 20 mins.

On B.E. 416, Cpt. Salmond 25 mins alone, with Lt. Todd 25 mins. On B.E. 442 Cpt. Salmond with Cpt. Fawcett 25 mins, with Lt. Harvey-Kelly 25 mins, with Cpt. Massy 10 mins. On B.E. 447, Cpt Salmond 10 mins. On Short 401 Maj. Gerrard 20 mins; Lt. Hathorne 65 mins, for R.Ae.C. Certif. On Short 402, Lt. Stopford with Lt. Agar 80 mins, with Ldg.-Smn. Barnshaw 30 mins. On H. Farman 445, Maj. Gerrard with Lt. Edmonds 10 mins, with Lt. Shekleton 40 mins; Lt. Mills 60 mins.

R.F.C., Farnborough.—On M. Farman 305, Cpt. Reynolds with A.M. Thake 25 mins, with Lt. Thompson 5 mins, Lt. Gould with Mr. McIver 40 mins. On M. Farman 306 Cpt. Reynolds with Dr. Paget 15 mins, Lt. Atkinson 15 mins, with A. M. James 20 mins, with A. M. Barter 10 mins. Lt. Gould with P.O. Page 15 mins. On M. Farman 357 Lt. Gould alone 15 mins; with A. M. Minter Candy 15 mins, with A.M. Lawes 15 mins. On B.E. 201 Lt. Soames 30 mins.

R.F.C., Montrose.—Flying confined to the St. Andrew's hangars. Cpts. Longcroft and Tucker on B.E., Lts. McLean and Martyn on M. Farmans. Sergts. Maj. Fletcher and Measures with Sergt. Mullin took brevets on M. Farman.

Hendon.—At GRAHAME-WHITE SCHOOL, 5 a.m., Lt. Boddam-Whetham straights, Lt. Eales straights with Instr. Manton.

At W. H. EWEN SCHOOL, 4.30 a.m., on 35-h.p., Caudron No. 1, M. Baumann with Lt. Bewes and Messrs. Gist and Warren. On 35-h.p. Caudron No. 2 Mr. F. W. Goodden with Cpt. Jennings and Mr. Jagenberg. Mr. T. H. Bayetto short flight. Above pupils again 6.20 p.m., also Mr. Dalrymple-Clark.

At BLERIOT SCHOOL, Cpt. Cox and Mr. Gower on No. 1 in morning straights and rolling. In evening Cpt. Cox, Lt. Low and Mr. Gower taxi.

At DEPERDUSSIN SCHOOL Col. Smyth on No. 3 straights, Mr. Jaques on No. 2. Engine caught fire, extinguished with sand. In evening Col. Smyth on No. 3.

At TEMPLE SCHOOL, 4 a.m., Mr. G. L. Temple testing Caudron, Mr. Ritchie circuits, Messrs. Penny, Ambler, Valle, and Lance straights.

Brooklands.—At BRISTOL SCHOOL, Mr. Merriam with Cpt. Shott and Lt. Newton straights. Lts. Morgan and Noott S's alone. Mr. Graham Harris circuit. Mr. Merriam alone.

At VICKERS SCHOOL, in morning Cpt. Wood, Maj. Brancker and Mr. Knight alone on biplane. Messrs. Barnwell and Knight with Messrs. Elsdon and Webb on biplane. Mr. Andreae alone on No. 2 mono, Mr. Beevor on No. 2 mono broke skid and propeller in landing. In evening Mr. Barnwell alone on biplane, and with Messrs. Elsdon and Webb. Mr. Knight on biplane with Lt. Smith, Mr. Elsdon, and Mr. Webb. Mr. Barnwell testing No. 5 mono.

Salisbury Plain (BRISTOL SCHOOL).—M. Julleroi in sociable mono, Mr. Pizey in biplane. Mr. Pizey with Lt. Miley, R.N., twice, and Cpt. Barnby, Mr. Garnett, and Cpt. Popovici alone on sociable mono, latter at 500 ft. and 1,000 ft. in capital style. Mr. Busteed on sociable mono with Lts. Beroinade and Paxanu. Mr. Garnett in mono nicely banked turns. Mr. Pixton in 80 h.p. mono with Lt. Osmond, R.N., M. Julleroi mono tuition to Cpt. Barnby. M. Julleroi mono tuition to Cpt. Barnby, Lt. Pascanu, and Mr. Delaplane. Mr. Pixton in sociable mono with Mr. Delaplane, Mr. Busteed tuition to Lt. Osmond, R.N.

Brighton-Shoreham (AVRO SCHOOL).—Mr. Geere, Mr. Gaskell and Mr. Shaw on Avro-Green.

Cpt. Conner came on M. Farman from Lark Hill and returned, and Lt. Ashton also arrived. Mr. Pashley with passenger to Brighton.

Liverpool (Waterloo).—Before Mr. Barne—Hon. Sec. of prospective Liverpool Flying Corps. Mr. Melly took out Blériot 2-seater for exhibition. Mr. Hardman followed on "Y" Anzani, each doing 8's alternately.

Mansfield.—Mr. Whitehouse on Handley-Page mono trial 45 mins, but owing to thick evening mist rising after start unable to find ground on return and flew right over it; he landing at Pleasley, three miles north of Mansfield.

TUESDAY, June 17th.

R.F.C., Central Flying School.—Fine, clear early. Very dull later. Moderate S.W. wind. On Avro 430, Lt. Wanklyn with A.B. Townsend 55 mins; with A.M. Baldock 40 mins; 25 mins alone. On Avro 432, Lt. Fuller 15 mins; Lt. Hordern 15 mins; Lt. Morgan 20 mins; Maj. Fulton with Lt. Wilson 30 mins; Lt. Wilson 23 mins; A.M. Higginbottom with Sergt. Little 25 mins; with A.M. Baldock 15 mins. On Avro 433, Lt. Brodribb 20 mins to Ludgershall and back; Lt. Picton-Warlow 15 mins over Bulford, etc.; Maj. Fulton with Lt. Maude 10 mins; Lt. Maude 57 mins. On Avro 448, Lt. Reilly 40 mins; Lt. Corballis 90 mins, 10 Devizes, etc.; A.M. Higginbottom with Sergt. Little 30 mins; Sergt. Jarvis 15 mins and then for R.Ae.C. Certificate 35 mins, excellent style, good landings close to mark.

On M. Farman 403, Lt. King 37 mins; Lt. Noel 32 mins; Lt. Cutler 62 mins; Lt. Gaskell 28 mins; Lt. Sitwell 18 mins; Lt. Birch 22 mins; Lt. Shepherd 9 mins. On M. Farman 418, Lt. Shepherd with Lt. Rodwell 35 mins, with Lt. Birch 30 mins, with R.R.A. Case 62 mins and 5 mins alone. On M. Farman 427, Cpt. Hoare 40 and 41 mins; Lt. Sitwell 20 mins; Lt. Newall 80 mins; Lt. Rodwell 18 mins; Lt. Shepherd 8 mins; Lt. Gaskell 17 mins. On M. Farman 431, Asst.-Paymr. Lidderdale 70 mins; Engr.-Lt. Randall 85 mins; Maj. Trenchard (twice) 10 mins; M.M. T. O'Connor 20 mins.

On B.E. 416, Cpt. Salmond with Lt. Pretyman 28 mins, with Lt. Adams 15 mins. On B.E. 442, Lt. Stopford with Cpt. Fawcett 25 mins, with Lt. Murray 13 mins; Cpt. Salmond 10 mins alone, with Lt. Harvey Kelly 14 mins, with Lt. Kershaw 25 mins. On B.E. 449, Cpt. Massy 62 mins, Lt. Stopford with Asst.-Paymr. Lidderdale 12 mins; Cpt. Salmond 21 mins.

On Short 401, Maj. Gerrard with Sergt. Waddington 10 mins, with Lt. Agar 5 mins; Lt. Stopford 5 mins. On Short 402, Maj. Gerrard with Lt. Agar 55 mins; Lt. Agar 40 mins; Sergt. Vagg 35 mins; Lt. Stopford with Ch.M. Scott 30 mins. On H. Farman 422, Maj. Gerrard with Lt. Gill 20 mins, with Lt. Small 27 mins. On H. Farman 445, Lt. Shekleton 35 mins; Lt. Mills 35 mins; Maj. Gerrard with Sergt. Vagg 15 mins; Lt. Stopford with Lt. Small 15 mins; Maj. Gerrard with A.M. Hamilton 10 mins, with A.M. Green 10 mins, with A.M. Chandler 10 mins.

R.F.C., Farnborough.—On B.E. 201, Maj. Raleigh 10 mins; Lt. Wingfield-Smith 15 mins.

Hendon.—At W. H. EWEN SCHOOL, 4.10 a.m., on 35-h.p. Caudron No. 1, Lt. Bewes took brevet. Mr. Prosser on same. On 35-h.p. Caudron No. 2, Messrs. A. L. Russell and T. H. Bayetto; Mr Dalrymple-Clark rolling. 6.30 p.m., above pupils again, also Cpt. Jennings.

At BLERIOT SCHOOL, Cpt. Cox, Lt. Low and Mr. Williams on No. 1, straights and rolling. In evening Cpt. Cox, Lt. Low, and Mr. Gower, ditto. Mr. Corbett Wilson and Mech. Polet left for Hampshire on So-tandem.

At DEPERDUSSIN SCHOOL, Col. Smyth and Lt. Brock 30 mins each straights and turns in early morning; in evening Col. Smyth straights, but broke some fuselage wires. Mr. Spratt on 60-h.p. two-seater then took up Mech. Harkness.

At Temple School, 5.30 a.m., Messrs. Ritchie, Vaile, Lance, Ambler, Penny on Caudron. Mr. G. W. Temple many flights. In evening, Mr. Ritchie circuits, Messrs. Ambler, Penny, and Lance straights.

Brooklands.—At Bristol School, Mr. Bendall trial. Mr. Skene and Lt. Noott 8's. In evening Mr. Bendall behind Lt. Newton. Mr. Harris alone. Mr. Bendall, with Cpt. Shott and Lt. Newton, straights and circuits.

At Vickers School, in morning Mr. Barnwell and Maj. Brancker alone on biplane. Messrs. Barnwell and Knight with Messrs. Elsdon and Webb on biplane. In evening, Messrs. Barwell and Knight on No. 5 mono. Mr. Knight with Mr. Elsdon on biplane, Major Brancker alone.

Brighton-Shoreham (Avro School).—Mr. Geere and Mr. Shaw on Avro-Green. Lt. Ashton left for Lydd.

Salisbury Plain (Bristol School).—Mr. Pixton on biplane with Lt. Orton, Cpt. Barnby, and A.M. Pratt. Cpt. Popovici alone at 500 ft. Mr. Garnet at 200 ft., both landing well. Mr. Pizey on biplane with Cpt. Barnby, and on mono with Lts. Beroinade and Pascanu, and Mr. Delaplane.

First flights alone in fine style by Lts. Osmond and Miley in biplanes.

Messrs. Busteed and Pizey tests, former then with Lts. Pascanu and Beroinade. Mr. Pizey on biplane with A.M. Pratt. Mr. Pixton with Cpt. Barnby and Lt. Orton. M. Jullerot on Sociable with Mr. Delaplane. Mr. Garnett and Cpt. Popovici each alone in mono. Lts. Miley and Osmond, R.N. Cpt. Barnby and A.M. Pratt each alone in biplane.

Liverpool (Waterloo).—Mr. Melly on Blériot two-seater 8's.

WEDNESDAY, June 18th.

R.F.C., Farnborough.—On B.E.201, Maj. Raleigh 1 hr. 45 mins. Lt. Soames 25 mins. Then Maj. Raleigh to Netheravon 50 mins. On M. Farman 306 Lt. Atkinson arrived Andover 50 mins. On M. Farman 305, Cpt. Reynolds arrived Netheravon 50 mins. On M. Farman 307 Lt. Gould 10 mins; with A.M. Ledger 15 mins. Later arrived Marlborough 30 mins; Marlborough to Ramsbury 30 mins. On M. Farman 357 Lt. Holt 15 mins, with A. M. Wilson 1 hr. 55 mins. Farnborough to Netheravon.

R.F.C., Montrose.—Cpt. Becke three flights on M. Farman, Sergts. Smith, Kessler and Neethey as observers.

Hendon.—At Grahame-White School, Mr. Manton on Blériot; Mr. Carr circuits and 8's on biplane under Instr. Cheeseman.

At W. H. Ewen School, 4.20 a.m., on 35-h.p. Caudron No.1 Mr. E, T, Prosser took brevet. On 35-h.p. Caudron No. 2, Messrs. Jagenberg, Dalrymple-Clark, Cpt. Jennings, and Mr. T. H. Bayetto; 6.10 p.m., on 35-h.p. Caudron No. 1, M. Baumann with Mr. H. Gist. On 35-h.p. Caudron No. 2, Messrs. Jagenberg, Dalrymple-Clark and Cpt. Jennings.

At Depердussin School, in morning Col. Smyth on No. 3, turns; in final landing did not flatten out and considerably damaged machine. In evening Mr. Spratt on 60-h.p. landing with well calculated spiral, engine stopped.

At Blériot School, Lt. Low and Messrs. Williams and Gower on No. 1 taxi; in evening Cpt. Cox, Lt. Low, and Messrs. Williams and Gower straights and rolling. Cpt. Cox in avoiding sheep damaged machine somewhat. Mr. Hamel in afternoon took up Mr. Seymour Metford, Mr. R. B. Slack, and his mechanic Gondre on new 80 tandem.

At Temple School, 3.30 a.m., Mr. G. L. Temple test; Mr. Ritchie and Lt. Ambler circuits; Messrs. Penny, Vaile, and Lance straights. Later Mr. Temple out in wind. Lt. Green rolling on Blériot.

Brooklands.—At Bristol School, Mr. Bendall test, then with Mr. Pendlebury (new pupil), later with Cpt. Shott and Lt. Newton. In evening Mr. Merriam test with Mr. Pendlebury. Later Mr. Bendall again with Lt. Newton.

At Vickers School, Messrs. Barnwell and Knight with Cpt. Balfour on biplane. Maj. Brancker alone, Mr. Barnwell and then Mr. Mitchell on No. 3 mono. Maj. Brancker took brevet (biplane), in very good form. In evening Messrs. Barnwell and Knight on biplane, latter with Lt. Smith. Mr. Barnwell on No. 5 mono.

Salisbury Plain (Bristol School).—M. Pizey with Lt. Pascanu on sociable mono; Mr. Pixton long flight with Lt. Orton and later with A.M. Pratt. In evening Mr. Pizey trial, then with Lt. Orton twice and Cpt. Barnby once. Mr. Busteed on mono to Cpt. Popovici, Lt. Pascanu, and Mr. Delaplane.

Market Drayton, Salop.—Mr. B. C. Hucks on 70-h.p. Blériot: masterly demonstrations.

THURSDAY, June 19th.

R.F.C., Netheravon.—On M. Farman 307, Lt. Gould with A. M. Ledger arrived Netheravon from Ramsbury 35 mins.

Hendon.—At W. H. Ewen School, 12.55 p.m., Mr. Sydney Pickles started for Eastchurch on new 45-h.p. Caudron doing journey in 40 mins, returning in evening.

At Temple School, Mr. G. L. Temple exhibition flights on Caudron, with Mr. J. L. Hall and his sister as passengers.

Brooklands.—At Bristol School, Mr. Merriam circuits with Cpt. Shott. When wind dropped Mr. Merriam with Lt. F. MacNeece (prospective pupil), afterwards with Cpt. Shott and Lt. Newton. Mr. Bendall with Cpt. Shott and Lt. Newton.

At Vickers School, Messrs. Barnwell and Knight with Cpt. Balfour on biplane. Maj. Brancknер alone. Mr. Barnwell and then Mr. Mitchell on No. 3 mono. Maj. Brancknер took brevet (biplane) in very good form. In evening Messrs. Barnwell and Knight on biplane, latter with Lt. Smith. Mr. Barnwell on No. 5 mono.

Brighton Shoreham (Avro School).—Mr. Geere and Mr. Shaw out.

Salisbury Plain (Bristol School).—Mr. Busteed early with Lts. Beroinade, Pascanu, and Mr. Delaplane on mono, later with Lt. Orton on biplane. Cpt. Barnby, Lts. Miley and Osmond, R.N., alone in biplane.

Ludlow, Salop.—Mr. B. C. Hucks on 70-h.p. Blériot: notable exhibition flights before large and enthusiastic crowd.

Mansfield.—Mr. Whitehouse on Handley Page mono flew back from Pleasley to Mansfield.

FRIDAY, June 20th.

R.F.C., Central Flying School.—Moderate W. wind. Fine, clear. On M. Farman 411, Lt. Shepherd with a passenger 5 mins. On M. Farman 418, Lt. Shepherd 5 mins.

R.F.C., Netheravon.—On M. Farman 305, Cpt. Board 25 mins, with A.M. Lawes 15 mins, with A.M. Ausprey 15 mins. On M. Farman 307 Lt. Gould with A.M. Smith 35 mins, with Lt. Bennattyne 50 mins, with Lt. Waterhouse 10 mins.

R.F.C., Montrose.—Morning and afternoon flights by Cpts. Becke, Longcroft, Tucker, and MacDonnell on B.E. Lts. Waldron, Lawrence, Martyn, and McLean in M. Farmans, flights given to Lts. Binney, Bowen, and Sgt.-Maj. Wiseman of R.F.A. in camp at Barry, by Cpt. Longcroft and Lt. Waldron.

Hendon.—At Grahame-White School, Lts. Boddam-Whetham and Eales straights. Sir A. Sinclair straights and circuits with Instr. Manton. Mr. Carr circuits with Mr. Cheeseman.

At W. H. Ewen School, 4.30 a.m., on 35-h.p. Caudron No. 1, M. Baumann with Messrs. W. Warren, A. L. Russell, Jagenberg, and Cpt. Jennings. 6 p.m., on 35-h.p. Caudron No. 2, M. Baumann with Messrs. Warren, Gist, Jagenberg, Dalrymple-Clark, and Cpt. Jennings.

At Deperdussin School, Mr. Murray on taxi 2, good rolling and hopping.

At Temple School, 4 a.m., Mr. G. L. Temple test; Mr. Ritchie good 8's, Mr. Ambler circuits, Messrs. Vaile, Lance, Penny straights; Mr. Penny later good left turns. Lt. Gran out on Blériot No. 2.

Brooklands.—At Vickers School, Messrs. Knight and Barnwell on biplane with Messrs Elsdon and Webb. Mr. Knight, Mr. Mitchell, and Mr. Barnwell on No. 5 mono. In evening Mr. Barnwell and Mr. Orr Paterson on No. 3 mono. Messrs Knight and Barnwell on biplane, former with Mr. Elsdon, and then with Mr. Webb, last-named landing very heavily, doing considerable damage.

At Bristol School, Mr. Bendall test, then with Cpt. Shott, Lt. Newton, and Mr. Pendlebury straights and circuits. Mr. Merriam for high flight, then up with Mr. Pendlebury, pupil in control. Mr. Bndall behind Lt. Newton straights and circuit. Afterwards Mr. Merriam took a passenger. Then Lt. Noott took brevet, reaching 1,000 ft. in first test, and landing right on mark.

Brighton-Shoreham (Avro School).—Mr. Geere and Mr. Shaw out, former damaged machine.

Salisbury Plain (BRISTOL SCHOOL).—Mr. Garnett and Cpl. Popovici good mono solos. Mr. Pizey later for test, Cpt. Barnby and Lt. Miley, R.N., twice alone; Lt. Osmond, R.N., once. Mr. Pizey mono tuition to Lts. Berionade and Pascanu, and Mr. Delaplane.

Windermere (LAKES FLYING CO.)—Mr. Stanley Adams testing "Water Hen" after her visit to Hornsea Mere.

Lincoln.—Mr. Whitehouse on Handley Page mono started to fly to Lincoln for exhibition, but came down five miles from Lincoln, at Doddington, owing to faulty plug.

SATURDAY, June 21st.

R.F.C., Netheravon.—On M. Farman 306, Lt. Gould with A.M. Storey arrived from Andover. On M. Farman 307 Lt. Gould with Lt. Waterhouse 10 mins.

Hendon.—AT GRAHAME-WHITE SCHOOL, Lts. Eales and Boddam-Whetham straights, Mr. H. E. Russell straight with Instr. Manton behind. Mr. Carr circuits alone.

AT W. H. EWEN SCHOOL, 4.30 a.m., on 35-h.p. Caudron No. 1, M. Baumann with Messrs. Dalrymple-Clark and Cpt. Jennings.

AT DEPERDUSSIN SCHOOL, Mr. Brock won speed handicap on No. 5 (35-h.p.).

AT W. H. EWEN SCHOOL, in morning Mr. Sydney Pickles to Brighton for superior brevet on 45-h.p. Caudron biplane, arriving Shoreham in 1 hr 35 mins—twice lost in fog. Return journey 1 hr 10 mins; well inside time.

AT TEMPLE SCHOOL 6 a.m., Mr. G. L. Temple testing Caudron. Lt. Ambler circuits; Mr. Ritchie 8's. Mr. Penny half circuits; Mr. Vaile, Mr. Lance, and Lt. Gran straights. Mr. G. L. Temple later flew in race.

(Competition flying specially reported.)

Brooklands.—AT VICKERS SCHOOL, in afternoon Messrs. Barnwell and Mitchell on biplane. Mr. Knight on No. 5 mono. Mr. Barnwell on Blériot mono; Mr. Mitchell on biplane; Mr. Knight on No. 5 mono, then in race. Mr. Knight specially hard lines, as when looking certain winner had to land in cornfield, owing to empennage working loose, doing some damage. Mr. Mitchell (winner) made excellent flight on school biplane, rounding pylons in professional style.

AT BRISTOL SCHOOL, 9.10 a.m., Mr. Merriam test, then with Lt. Newton to Chertsey and back. Messrs. Merriam and Bendall testing, then both in cross-country race, Mr. Merriam second. Exhibition flights, then with Cpt. Shott. Mr. Bendall with same pupil. Mr. Skene 8's. Cpt. Shott first straights. Mr. Bendall finished work alone.

Brighton-Shoreham.—Mr. Pashley over Bungalow Town with brother. Mr. Pickles came from Hendon. Later to Brighton, circled pier, returned to Shoreham, leaving later for Hendon. In afternoon Mr. Pashley out. Eng.-Lt. Briggs, R.N., arrived from Eastchurch on Blériot.

Salisbury Plain (BRISTOL SCHOOL).—Mr. Pixton first up with Mr. Tower. Mr. Busteed with Mr. Delaplane and Lts. Berionade and Pascanu on mono. Cpt. Popovici and Mr. Garnett twice on mono. Cpt. Barnby, Lt. Miley, R.N., and Lt. Osmond R.N., twice on biplane. Mr. Delaplane, Lts. Berionade and Pascanu all first mono solos. Mr. Busteed finished flying with lady in sociable mono.

Windermere (LAKES FLYING CO).—"Water Hen" passenger carrying.

Liverpool (Waterloo).—Mr. Melly 8's on Blériot two-seater, then round Freshfield Hangars and Formby Golf Links, reaching 1,400 ft, and passing over own hangars to Gladstone Dock (which is to be opened next month by the King), over which he circled and landed at Waterloo after 30 mins. Mr. Hardman then on Y Anzani and did first cross-country flight of season, flying inland round Sefton to 1,000 ft. On return also circled Gladstone Dock and planed down to hangars.

SUNDAY, June 22nd.

Hendon and Brooklands —Special reports of Sunday flying appear on page 745.

AT W. H. EWEN SCHOOL, 4.30 a.m., M. Baumann on 35-h.p. Caudron No. 1 with Messrs. Dalrymple-Clark, Jagenberg, and Cpt. Jennings.

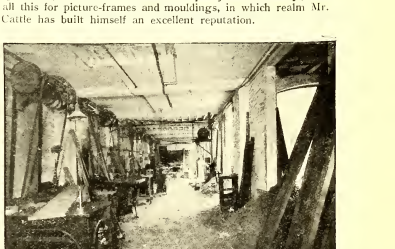
Lincoln.—Mr. Whitehouse on Handley Page mono left Doddington, and after flying round Lincoln at 2,000 ft made splendid landing in exhibition ground in Nettleham Road. Later in evening made another flight.

Brighton-Shoreham.—Mr. Pashley on Hewlett-Blondeau.

Wood-work and the Aeroplane.

When, forty years ago, Mr. R. Cattle set out, with the aid of two employees, to provide picture-frames and mouldings for the artistic public, probably he did not realise that he was founding a business which, in course of time, would come to occupy seventy hands and 16,000 feet (super), the latter being the ground-space covered by Mr. Cattle's new factory at 27, Wybert Street, Stanhope Street, N.W.

This factory contains a host of machines—many of them emanating from the brain of Mr. Cattle himself—for doing to wood practically everything that can be done to wood—sawing, planing, moulding, turning, mortising and numerous other operations, with the maximum of rapidity and accuracy; and all this for picture-frames and mouldings, in which realm Mr. Cattle has built himself an excellent reputation.



One of the machine shops in Mr. Cattle's works.

It is true that aeroplanes differ in several important respects from both picture-frames and mouldings, but it is also true that they have much in common, particularly in connection with the earlier stages of their respective life histories. The wonderful machine, whose vertical blade revolving at 1,600 r.p.m., can fashion ten feet of complex moulding in as many seconds; can also shape, nearly as quickly, half a dozen wing-ribs, clean, smooth and true to template. Practically every process through which any wooden member of an aeroplane has to pass is utilised already by the woodworkers of one trade or another, yet to which of these craftsmen can the limping experimenter, on emerging from his iodoformy cocoon, address himself as follows: "Dear sir,—Kindly supply fifty more ribs as per enclosed pattern, ten struts precisely as before and four spars to the enclosed dimensions; you will note that in the latter case I have increased the" . . . etc.?

At the moment there is no such woodworker; the trade, as yet, cannot stand by itself; but as a department of some well-established, well-organised, well-informed woodworking firm with a reputation to maintain and a sense of the responsibility which aeroplane woodwork involves, there is good business to be done, for the occasional constructor, the man who executes his own repairs, and, indeed, the aeroplane manufacturer, until he gets to work on a very large scale, cannot afford to put up these expensive machines, whose economy lies in their speed of production and in being kept constantly at work. Thus, when the big efficient woodworker starts a responsible aeroplane department the result will be more work for his machine, and economy both of time and money for the constructor.—A.B.

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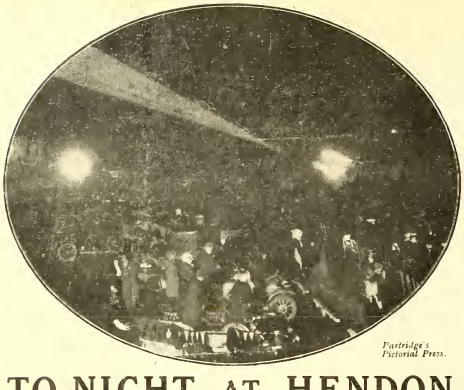
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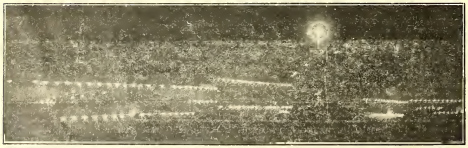
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"News Illustrations."

NEXT SATURDAY, JUNE 28th, 1913.

ENTENTE CORDIALE DAY

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